

BUTANE-PROPANE *News*



No.13

JUNE 1940

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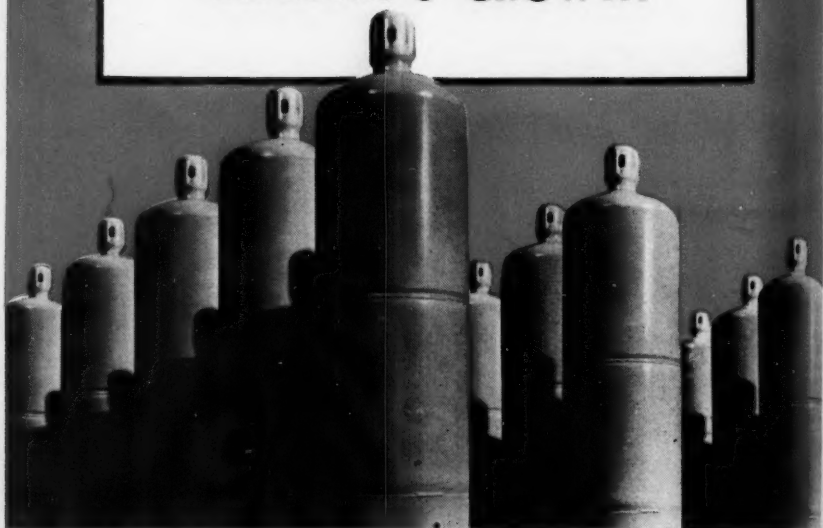
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HACKNEY DEPENDABILITY CONTRIBUTED TO THE INDUSTRY'S GROWTH



Hackney's ample engineering and production facilities are the result of more than 35 years' experience in designing and manufacturing cylinders strictly for compressed gases. No wonder Hackney was able to aid in the rapid growth of this new, young industry.

Hackney dependability and complete user satisfaction have won a preference in the industry. In Hackney cylinders there are minimum seam area, a single circumferential Hackney process butt weld and many other design and construction advantages. There are X-ray control of welding procedure and heat treatment of finished cylinders—safe-

guards with the view toward giving you a better cylinder.

In manufacturing Hackney cylinders, Pressed Steel Tank Company has assured you of maximum strength, minimum weight and uniform capacity—all aimed at effecting important economies for you.

If you are not already using Hackney cylinders, send today for complete information. Let a Hackney engineer help you determine the most practical and economical container for your needs. Where requirements are special, he will help you design and develop a container to meet them exactly. There is no obligation.



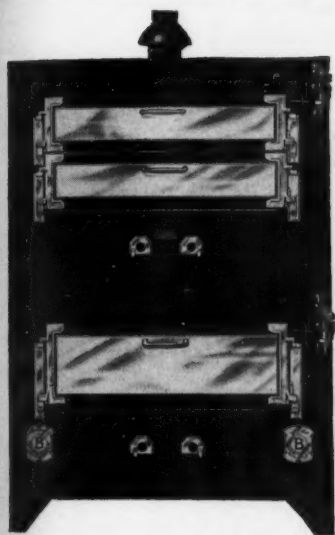
PRESSED STEEL TANK CO.

208 S. LaSalle St., Rm. 1519
Chicago
1399 Vanderbilt Concourse Bldg.,
New York

695 Roosevelt Bldg.,
Los Angeles
1487 S. 65th St.,
Milwaukee

Containers for Gases, Liquids and Solids

The Easiest Way To Increase Your Load



FOR BIGGER PROFITS

To increase your load and thereby increase your profits, the line of least resistance is with commercial appliances where consumption is great but still economical to the owner. One of these appliances is the famous Blodgett Ovens which can be used to advantage by restaurants, hotels, bakeries, and camps, large or small. There's one for every commercial kitchen, and dealers who are not familiar with this profitable item should inquire at once. For Baking and Roasting Blodgett Ovens are supreme. They have been standard since 1848.

THE G. S. BLODGETT COMPANY, INC.

53 Maple St. - Burlington, Vt.

BLODGETT OVENS

BUTANE-PROPANE *News*

JUNE
1940

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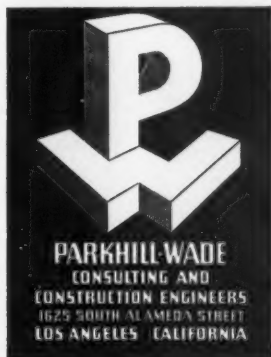
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PUBLISHERS: GAS, The Natural Gas Magazine; HANDBOOK BUTANE-PROPANE GASES

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**ENGINEERS ★ DESIGNERS
CONTRACTORS
MANUFACTURERS
of
L. P. G. Production Plants
L. P. G. Storage Systems
L. P. G. Municipal Systems
Bus, Truck
and Tractor Conversions
and
SPECIAL LIQUEFIED PETROLEUM GAS
APPLICATIONS**



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LETTERS

- **BUTANE-PROPANE News welcomes communications from those identified with the liquefied petroleum gas industry, but readers will understand that this magazine does not necessarily concur in the personal opinions so expressed.—Editor.**

Gentlemen:

I think you may be interested in a letter we have just received from Egypt, one of many that have come to us from foreign countries in response to our advertising in BUTANE-PROPANE News. It is from "The Bottled Gas Co. S.E.A." at Le Caire, Egypt, and I quote it verbatim:

"With reference to the article by your sales engineer, Mr. D. C. Perkins, in the February issue of BUTANE-PROPANE News, regarding the U. S. Army stoves manufactured by your firm, we have pleasure in informing you that you would greatly oblige us with a quotation CIF Alexandria (Egypt) including delays of delivery, particulars, details, sketches showing dimensions and photographs illustrating the said stoves by return.

"We beg to call your attention, however, that we intend, should orders follow, to feed these stoves with butane gas as a fuel and not propane, and therefore the eventuality of your adapting these stoves for butane should be borne in mind."

Other letters received recently were from "Comp-toir Des Gas Industriels," Paris, France, and Jonas Sjoström, Stockholm, Sweden.

We have had very satisfactory response from your national and international coverage in the field of the liquefied petroleum gases and related equipment.

F. W. COMMINS

Appliance Sales Department
Ransome Company
Emeryville, California

Gentlemen:

Several of our boys are getting so much good out of the copies of BUTANE-PROPANE News coming to Malvern that I would like to have the magazine going regularly to them direct. Some of them do not get to Malvern so I am willing to pay for theirs myself. In other words, I don't want the salesmen to pay for subscriptions, but I am enclosing their names and you can bill me. They have all given me their promises that they will read the magazine thoroughly.

Z. T. CALDWELL

Adams Brothers Manufacturing Company
Malvern, Arkansas

Gentlemen:

Enclosed is card, requesting that the Gas Magazine be sent to us. Please be sure that we get the April Issue, also.

And sometime ago, we received from you a little leaflet called "THE ABC OF L.P.G.," which one of our salesmen has carried right along with him everywhere he goes, and he has found it contains such valuable information, that the other salesmen want a copy of it also.

Would you please forward us a dozen copies of this booklet? We would appreciate it so much.

T. T. BURGESS

Manager, Arkansas Butane Company, Inc.
Little Rock, Arkansas

Gentlemen:

Somehow our copy of the May issue of BUTANE-PROPANE News was misplaced.

We do not want to miss a single copy of this book so are asking that you send us another copy of that issue.

LEONARD WARDEN, JR.

Leonard Warden Distributing Company
Memphis, Tennessee

Gentlemen:

I want to say that I have profited immensely from the use of your HANDBOOK BUTANE-PROPANE GASES, and look forward every month to receiving the BUTANE-PROPANE News, which is indispensable in our business.

L. V. ROTHROCK

Liquid Gas & Appliance Co.
Twin Falls, Idaho

Gentlemen:

We must compliment you on your excellent periodical. It is an exceptionally fine and well-designed magazine, and we always look forward to the next issue. It is my personal opinion that EVERY one interested in butane or propane gases should be a subscriber to this News.

THOMAS I. FORSTER

F & E Manufacturing Company
Berkeley, California

Gentlemen:

We have mislaid our April issue of BUTANE-PROPANE News and wish you to send us a copy if available.

We find your magazine very interesting and helpful and do not like to miss an issue.

We entered the Butane field in 1937 having pioneered the business in eastern Arizona.

C. W. LONG

Long's Furniture Company
Safford, Arizona

BUTANE-PROPANE News

Proved **P**ERFORMANCE PROFITS

BUTANE
PROPANE

WITH
ALGAS CARBURETION

Because they have pioneered the field, Algas engineers have developed liquefied gas conversion equipment that is proved by thousands of internal combustion engines operating everywhere under all kinds of conditions. Algas Carburetors have *Proved* their performance . . . and their profits.

WRITE US TODAY

No doubt you want to know how Algas Carburetion equipment can save you money. Consult our trained staff. No obligation. Let us tell you the profits available.

BUTANE

ALGAS

PROPANE

American Liquid Gas Corp.

Main Office

1109 Santa Fe Avenue Los Angeles, Calif.

FOR EVERY LPG NEED

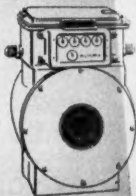
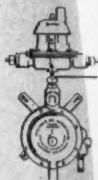
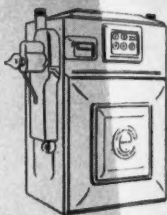
in ATLANTIC STATES GAS metered service

When Atlantic States Gas Company initiated metered LPG service as an equivalent of city gas service, an essential task was the education of customers to this type of gas distribution. In fostering their confidence, the accuracy of the AMERICAN Liquefied Petroleum Gas Meters utilized has played no small part. Cost of meter repairs is reported negligible.

● NOTE: American Meter Company pioneered in the special treatment of diaphragms and other construction materials, necessary to efficiency in LPG metering. A complete line of meters, each adapted to the exact requirements . . . and a country-wide engineering service.

GENERAL OFFICES - 60 EAST 43RD STREET, NEW YORK, N. Y.

AMERICAN
METER COMPANY
INCORPORATED (ESTABLISHED 1892)



Complete meter and line assembly showing meter, regulators, fin tubing, copper tubing and fittings.

1444

MAINLY BEYOND THE MAINS

TROUBLESOME BRAT

We have it on the authority of an electrical trade publication that a certain utility has found bottled gas competition so "troublesome" that it has devised a spe-

cial and elaborate dealer program to try to save electric cooking and water heating from the encroachments of butane and propane.

The backbone of the scheme is a series of subsidies to spur dealers on to extra efforts to undermine the existing load carried by LPG. Dealers are to receive a bonus of \$10 for every electric range sold which does not replace gas or electric equipment. This proviso is necessary because the utility is a combination company, selling both natural gas and electricity in many areas. The power company will pay 25% of the trade-in allowance up to \$20. A \$10 allowance is made for LPG water heaters taken out of service and replaced by electric heaters. The utility pays for the appraisals; wiring contracts will be carried with no down payment and no carrying charge; and utility home service representatives will follow up and aid the dealers sales activities.

The whole program strikes us as short-sighted. Here is a combination utility with hundreds of thousands of gas consumers on its city and town mains—with a record of good will and fair dealing that it has built up over almost a century of experience; and with an intimate and proven knowledge of gas distribution, utilization, service and customer relations, that only experience can bring.

Yet, confronted with a new medium for the expansion of gas service beyond the existing mains, it regards it as "troublesome" competition.

How much better if any combination gas and electric company would adopt the policy that a vigorous and aggressive LPG department would be a decided asset in extending its gas service as existing communities expanded. The isolated house of today is merely one of a row of homes tomorrow. The individual residential installation made in 1940, may well be but another meter on a service main extension in 1945.

On the very face of the record LPG should recommend itself. The 1939 increases over 1938, according to the most reliable figures ob-

tainable are: For gas, both manufactured and natural, going into residential consumption, 4.0% in cubic feet; electricity 6.9% in kw. hrs., and for liquefied petroleum gas going into domestic consumption, 40% in gallons. No doubt bottle gas is becoming a little "troublesome," and it has hardly started!

BE NOT TOO GENEROUS

A little extra for good measure is a good will gesture for the grocer who is weighing out a couple of pounds of peas in a paper bag, especially if you are standing behind him with an eye on the scales. But the LPG operator who feels a similar surge of generosity welling up within him had better curb the impulse with a firm hand. A 100-pound propane cylinder is designed to hold 100 pounds of liquid gas, and not 105 pounds or 110 pounds.

R. E. Cecil, writing in *Jet*, points out how serious even the slightest overloading can become due to the nature of the liquid gas and its rapid expansion under temperature rises. A 10% overload by weight may result in a 1000% overload of pressure in a cylinder with the slightest increase in temperature.

"One cannot be too careful . . .," writes Mr. Cecil, "Checking scales with a correct dead weight twice a day is not too often."

Every plant employe connected with filling operations should be made fully aware of the extreme accuracy that is required of him. As a bonus for his care he can have every reason to expect that he will live a lot longer.

CALL ME JIM

We have a clipping to the effect that a Washington, D. C., master plumber urges that the gentlemen of his craft put in their spare time dropping in on their competitors, to get acquainted with them personally. His own experience in this respect has convinced him that "they are all splendid men. They are welcome guests at my home."

While we have never adhered to the theory that all of our competitors are suspects, and normally belong interned in a concentration camp, we do not at the moment have time to try out the Washington commentators' recommendations for a more fulsome fraternizing.

In our spare time we are inclined to the more realistic occupation of getting a little better acquainted with our present and prospective customers. Once we have this avenue of activity completely explored, and the houses that border it 100% sold, we will look into the matter of the competitor. Maybe they will all be visiting each other and we can meet them all in a single call—after business hours.

Production and Utilization of the Butanes

By J. C. ALBRIGHT

BUTANE has been, until a few years ago, considered by the manufacturer of this hydrocarbon as a necessary evil, causing excessive vapor pressures of gasoline. The result was that enormous quantities were burned as a gaseous fuel in boilers of the gasoline plants or vented to the atmosphere to be wasted entirely. Natural gasoline, always associated with and a part of the lighter hydrocarbons, has been fractionated to produce a butane free product so that those fractions, pentanes and heavier, could be included in greater quantities for the manufacture of automobile fuel.

With the advent of polymerization, the butanes, particularly the isobutane, have been in greater demand for making an extremely high octane gasoline, suitable for high compression ratio internal combustion engines. The butanes, as well as propane in certain blends, have been found to be admirably fitted for use in truck motors and in drilling engines in the various oil fields, not to mention the adaptation of these liquids for consumption in domestic areas.

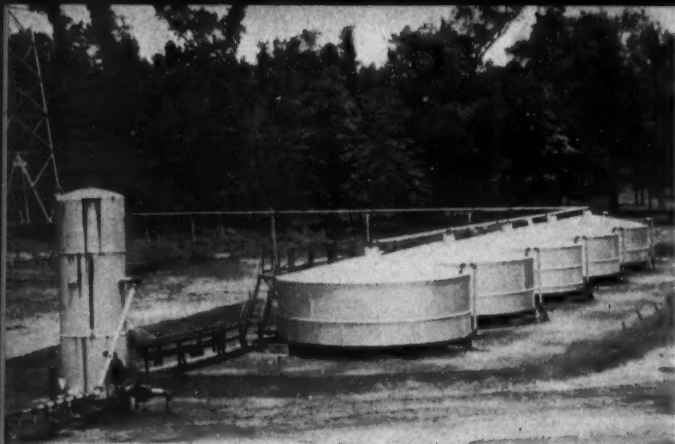
One of the largest areas from which butane is manufactured is the East Texas Oil Field. Approximately 130,000,000 std. cu. ft. of gas are produced in this great oil field each day,

which is producing as much as five gallons of butane per thousand cubic feet. Of this large volume, about 400,000 gals. each day are being pumped to the Texas Gulf Coast for use in polymerization plants, and to increase the volatility of motor fuel.

Butane Is Pumped 300 Miles

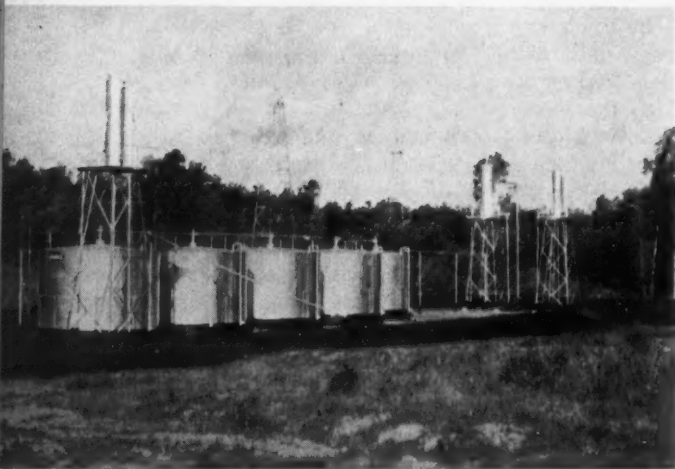
The gasoline, which contains the butanes, is pumped from the East Texas oil field gasoline plants through 300 miles of 8-in. pipe line, from a gathering station, near New London. The pipe line, with its initial pump station and intermediate boosters, has a capacity of about 20,000 bbls. per day, or 840,000 gals. The line was converted to gasoline service from crude oil use when the value of the butane produced in this field became well known.

The manufacture, or extraction, of butane from the gas produced with the oil in East Texas, is obtained from gasoline plants scattered throughout the field, most of which operate on the absorption principle. Variations of this method are encountered from plant to plant, some utilizing a heavy refined cut of oil for the absorption medium, and others obtaining the absorption medium directly from the gas as it is processed. Other plants operate as hot fractionation units, using compressors which deliver the gas



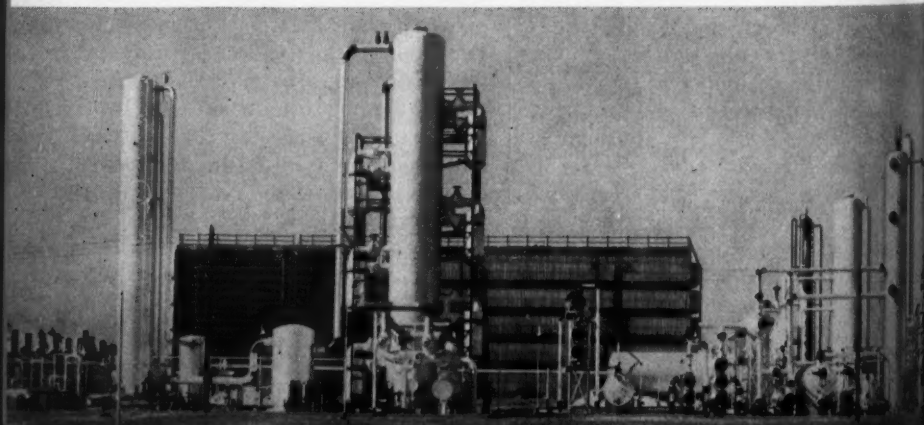
**Butane Is
Manufactured
Extensively
In the
East Texas
Oil Field**

ABOVE: Fig. 1. Trap on ground level which prevents liberation of dissolved gases from crude oil. Gas from such equipment yields low volumes of butane and propane.



CENTER: Fig. 2. Traps on elevated towers for maximum recovery of dissolved gases in crude oil.

BELOW: A large gasoline plant in East Texas which operates particularly for butane recovery from the casinghead gas.



to a column where the desired hydrocarbons are separated from the undesirable. Regardless of the method in use, the gasoline, containing propane, butane and heavier hydrocarbons, is held at about 60 lbs., Reid, vapor pressure.

The quantity of given hydrocarbons, including the butanes and propane, which may be extracted from a definite volume of gas, depends largely upon the method of producing these gases. If a well, or group of wells are produced with a back pressure on the tubing, whether pumped or flowing, the desired hydrocarbons remain in solution with the oil, and travel with it to the flow tanks, to be ultimately lost by evaporation. Fig. 1 illustrates the method of handling oil with excessive back pressure where the separator is situated on the ground so that pressure is required to force the oil to the storage tanks.

Methods for Greatest Recovery

But the gasoline plants which obtain the greatest recovery of liquefied products, propane and butane included, work closely with the oil producers so that a minimum pressure will be held against the tubing at the well. In Fig. 2 is shown a group of separators at a battery of oil tanks which are installed well above the top of the vessels, so that the oil will flow by force of gravity from the separators to the tanks, even if the pressure within the separator is below atmospheric pressure. Such installations are made so the maximum amount of dissolved gases may be separated from the oil with a corresponding increase in extraction of gasoline.

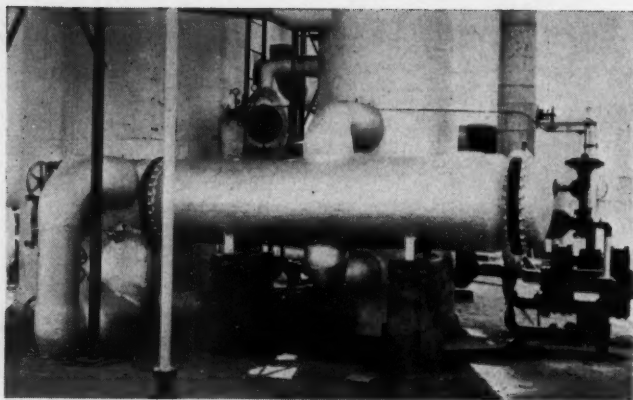
Most of the plants which are connected to the transportation system which is used for shipping the gasoline to the Gulf Coast have large storage tanks in which the gasoline is placed before it is pumped to the gathering system. Displacement meters are employed for measuring the gasoline from the tanks into the pipe line pumps, which have an accuracy within 0.1%. At New London the gasoline is either delivered directly to the main pipe line pump from the gathering system or it is stored in spherical tanks which have a large capacity of fluids.

At the Gulf Coast, the high vapor pressure gasoline is received in 80,000-gal. capacity spheroid tanks and smaller spherical vessels from which it is pumped to a super fractionation unit where the butanes and propane are separated from the remainder of the liquid. The gasoline received in these vessels has a composition similar to that shown below:

<i>Fraction</i>	<i>Liquid Volume Percent</i>
Propane and lighter.....	8.8 %
Isobutane	11.9 %
N-butane	42.00 %
Isopentane	11.3 %
N-pentane	10.6 %
Heavier	15.4 %

This indicates that more than half of the liquid produced, shipped and received on the Gulf Coast from East Texas is butane. The sum of the volumes of iso and n-butane equals 53.9%.

Many uses have been found for propane and the butanes after they have been separated from the gaso-



A refrigeration exchanger in an East Texas gasoline plant, using propane as the refrigerant, which is equipped for recovery of any fraction existing in East Texas casinghead gas.

line, among which are: propane, fuel and processing liquid which is used in various manufacturing steps in a refinery; isobutane, used principally in a thermal polymerization plant in the process of manufacturing high octane motor fuel; *n*-butane, utilized both as a charge to a polymerization plant, and as a blending fluid as such, for motor fuel production.

High Towers Required

The rectification system for the superfractionation of the large volume of gasoline produced in East Texas includes a number of vertical towers ranging from 103 to 120 ft. high and from 7 to 10.5 ft. in diameter. The number of fractionating plates run from 40 to 50, depending upon the use to which the column is put. The first column takes a charge of about 690,000 gals. per day of 24 hours of the typical composition gasoline and reduces it to a propane free product, the overhead liquefied product having less than 1% of butane, and

the bottom product containing no propane.

The liquid which has been depropanized is fed directly to the next column where the butanes are separated from the pentanes and heavier, the butanes coming from the top and liquefied with no propane and less than 3% of pentane. The pentanes and heavier are consistently butane-free, an analysis showing no measurable quantity of butane in the liquefied product. The butanes, both the iso and *n*-butane, are liquefied and charged to a similar tower so that the isobutane may be separated from the normal fraction. Less than 1% of normal butane is included in the isobutane fraction, and the normal-butane fraction contains less than .5% of isobutane.

By recovering the butanes from East Texas, the manufacturers, pipeline companies and refiners are to be commended for conservation of natural resources which has been accomplished, prompted by a desire for more efficient motor fuels.

Dealers May Now Share in New Form of Liability Insurance

By CLARENCE E. COOPER

Clarence E. Cooper Co., New York City

PRODUCTS liability insurance on behalf of the compressed gas industry was undertaken quite a few years ago and about four years ago the development of a good market was considered for products insurance for the LPG industry. The interest of a large company with nation-wide facilities was enlisted on the theory that the insurance would be written only for the better class of manufacturers, distributors and dealers who were vitally interested in safety and in operating according to the most approved standards. The insurance was designed to afford them the broadest possible safe protection against products liability claims.

During the past three or four years, this one company has written this type of business representing a fair volume of premiums, and the losses have not been too bad although there have been some claims.

Cost Will Be Lower

For the small retail dealers handling liquefied petroleum gases there is now available products liability and property damage insurance at lower cost when the insurance is effected as a supplement to the insurance carried by the wholesale distributor. Such insurance is limited to accidents resulting from the products which the dealer obtains from the wholesale distributor and while this insurance includes

claims arising from faulty installations by the dealer, it does not cover products obtained by the dealer from sources other than the said distributor. It does not cover the dealer in respect to accidents due to his servicing of equipment that he had not sold.

No Standard Form

There is no standard form of products liability insurance. There are many technicalities and the wording of the policy contracts has been the subject of considerable thought and many conferences.

It is important that the insurance properly describe the name of the assured. Some distributors and dealers operate as individuals; some as co-partnerships; some as corporations; and in some cases there are two or more corporations involved. It is of utmost importance that the policy clearly specify the interests which are insured thereunder.

Products liability insurance covers claims for bodily injuries including loss of use and claims for consequential damages, all of which must result from an accidental happening. While the term "Bodily injury due to an accident" is usually construed in a broad sense, it is considered advisable,

in order to avoid any misunderstanding, that the policy describe the term "bodily injury" as including sickness, disability and mental anguish because there are claims of that nature.

The insurance written for a manufacturer is limited to coverage only on sales made during the policy period unless special provision is made and usually a separate premium paid for prior sales. The insurance, of course, is limited to accidents occurring during the policy period.

The Difference in Policies

The ordinary liability policy in respect to bodily injuries states that the company is liable up to a certain limit for each person injured and a certain limit for each accident separately. The minimum limits are \$5000 for one person, and \$10,000 for more than one person injured in any one accident. Products liability insurance, however, differs in that it almost invariably includes an aggregate limit which means the total limit for which the company will be responsible in respect to all claims occurring during the policy period. When property damage liability coverage is carried, there is also an aggregate limit as to the total amount that will be paid as respects accidents occurring in any one policy year. It is therefore of utmost importance to watch this and if there should be a number of claims or a potentially large claim which might consume the entire aggregate limit of the policy, steps should be taken to reinstate the protection.

In respect to the limits of protection afforded by the policy it is also well to note the following clause

which is contained in many products liability policies and which applies to bulk merchandise:

"If merchandise or products from one prepared or acquired lot shall after the sale thereof, produce injuries to more than one person, the injuries of all persons proceeding from that common cause shall be considered as constituting one accident as respects the liability of the insurance company."

The liability policy excludes injuries to employees of the assured, but as an employe may be injured outside the course of his business duties it is important to make provision for such protection under the policy.

Coordination Important

The co-ordination of different forms of casualty insurance is important and the average distributor and dealer usually carries several forms of such insurance.

The distributor of gas may have his own trucks and carries automobile liability and property damage insurance. If so, the automobile insurance covers any accident resulting from the ownership, maintenance or use of the vehicle and this includes accidents which may be caused by the cargo on the vehicle. The policy also includes accidents caused by the loading and unloading thereof.

If the distributor's products are transported by common carrier, any accident resulting from gas explosion or ignition on the vehicle would be covered under the products liability insurance.

Manufacturers' and contractors' public liability insurance should be

carried by every distributor to cover accidents on the assured's premises and accidents caused while his employees are working away from the premises.

Gases delivered in tank trucks to storage tanks on the premises of the consumer, and gases distributed through pipe lines, as well as ranges, heaters, and other equipment are covered at a certain rate per \$100 of the selling price. The new basis of rates on gas so distributed will probably be on gallons or pounds, which will be more equitable because the premium will thereby be the same in all sections of the country even though the sales price may vary in different locations.

Protection Is Real Need

There is no question today about the need of manufacturers and dealers for products public liability insurance. Previously the spirit of the law was opposed to the imposition of liability which might tend to handicap the expansion of business, but the courts have more recently reflected the attitude of the times with the trend at present toward greater liberality.

The common law regarding warranties is being broadened by recent decisions. Written guarantees, labels, etc., are express warranties. There is a tendency to construe advertisements to be express warranties where radio, billboards, printed matter, etc., are used to create a demand for goods by representing that they possess certain qualities. It is not material whether it is the intent of the seller to warrant. A positive representation is enough to render him liable.

In addition to needing insurance protection against their legal liability for injuries resulting from actual defects and mistakes, manufacturers and dealers need protection against the numerous faked claims and hold-up suits which are instituted on the basis of alleged defects and negligence.

Should Report Every Accident

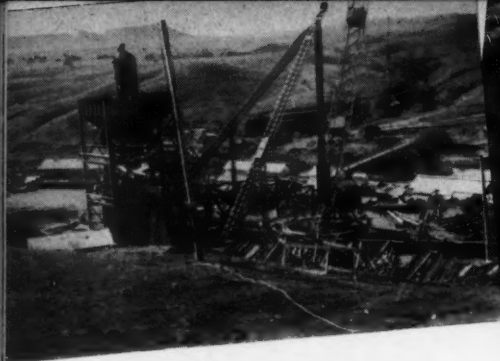
I think it would be appropriate to mention here what the attitude of the assured should be when an accident occurs. First, he should notify the insurance company or the insurance office which handles his insurance. This should be done no matter how trivial the accident may appear at the time, because many serious claims develop from apparently trivial accidents. The insurance policy requires that prompt notice be given to the company and failure to do so affords the insurance company an opportunity to deny liability. The assured should be non-committal except to his own insurance company which is going to have charge of the claim.

There are three important reasons for every manufacturer, distributor and dealer carrying products liability insurance:

(1) It affords a pre-determined cost which can be added to sales price or made a definite part of production cost.

(2) It offers the investigation and defense of claims, even though groundless and which is often expensive.

(3) It offers freedom from worry about ability to pay claims or judgments which may result in bankruptcy.



There Is a 100% Butane Town Flourishing at Friant Dam



TOP (left and right): Concrete mixing plant and view of excavating cut for Friant dam, Central California, now under Government construction.

AT LEFT: The offices and administration building at the Government camp.

NEXT BELOW: Every restaurant and other place of business has its own supply of butane, many of them like these 250-gal. tanks.



BELOW (left): Small trailer of employee on the Government project which has its individual installation of bottle gas. Tractor at right also uses LPG.

BELOW (right): Mrs. Ruth Arancibia, owner of the first cafe in the young town at Friant. She cooks with butane.



Ted Bankston at the door of the C. S. Merriman demonstration and display trailer which "worked" the Friant dam area.



Gas Helps Boom New Town

It has not been many years since the only way the advantages of gas for cooking, heating and refrigerating could be enjoyed was to be on city gas mains. Today, liquefied petroleum gas, serving the same ends as natural gas, but because it can be compressed and transported in small containers and tank cars, has become the means whereby residents of far outlying districts may have the conveniences of city dwellers.

An excellent illustration of this is shown at the new Friant dam, located on the San Joaquin River in the foothills of the Sierra Nevadas, 20 miles east of Fresno, Calif., where developing practically overnight, there is now a city of several thousand people.

Fuel for the new city is furnished entirely by butane, which is used by residences, trailer homes, restaurants and business houses for cooking, water heating, space heating and refrigeration. The government section of the project, consisting of 50 homes, two 34-room dormitories, a concrete testing laboratory and office building, is supplied through a system consisting of

a 6500-gal. storage tank and heat exchanger, which were installed by the Ransome Co., Emeryville, Calif.

Many of the hundreds of other installations were made by C. S. Merriman Co., Fresno, among which are several cabin camps in which the gas is piped through meters from large storage tanks to the respective cabins. Ted Bankston, a Merriman company salesman, supplied with a trailer filled with liquefied petroleum gas appliances, demonstrates the convenient operation of ranges, refrigerators and water heaters using butane gas to prospective customers in the Friant area.

Butane is also being used for many of the trucks and tractors operating on the dam project.

The introduction of butane to the Friant dam project has enabled those living there to do their cooking, heat their water, and in the winter to heat their houses and places of business in an easy, economical manner, and possibly of paramount interest, to supply refrigeration during the hot summers when the thermometer frequently reaches a temperature of from 110° to 120° during the daylight hours.

A Key to Success Lies In

Quality of Service

IN discussing the subject of "Service Calls" before men in the liquefied petroleum gas industry I realize you are in a business quite different from that of the Gulf States Utilities Co. in that your customers are hardly directly comparable to ours. Our operations are limited to a definitely confined metropolitan area and are located somewhat as spokes in a wagon wheel. In other words, when we get to the rim of the wheel, which we would call our branch feeder line, there is a definite stopping place, beyond which we do not sell natural gas service. It is largely outside of this rim that your customers are located.

Importance of Service Calls

The problem of handling service calls is, if not the most important, one of the most important functions of this business. The company, or in your case, the supplier, can do more to help or harm his business through the handling of this phase of his operation than through any other means. Naturally, the cost of the product is always extremely important to the customer but, based on our experience, it is not nearly so difficult to convince him that he has received full value and benefit from what he has paid you as it is to convince him that his appliances are operating properly and to further convince him that the abruptness and discourteousness of an employee are not true reflections of the

● **JAMES B. HODGE**, sales manager of the Gulf States Utilities Co., Baton Rouge, La., in a paper entitled, "Service Calls," presented before the March 28 meeting of the Louisiana Butane Dealers Association at Baton Rouge.—(Abstract by BUTANE-PROPANE News.)

company's interest in his welfare. The tact and diplomacy used in handling a customer's complaint are usually remembered by that customer long after the cost of the product has been forgotten. This is a well known fact.

Utilities Have Different Problem

Our natural gas mains are laid underground in the streets or alleys and almost invariably all of the families residing on a given street that is traversed by mains, are using natural gas service. In other words, we do not have a situation where we have a customer here and then perhaps have a skip of a mile or more before we run into another one, and under the circumstances it does not seem possible that you could afford to make service men available to your customers to the same extent that we can. However, as you increase your number of customers you are rapidly approaching the time when you probably will want to have service people available at all times of the day and night the same as we do, and when that time comes I cannot caution too vigorously to be most careful in selecting these men as they can be wonderfully help-

ful to you or they can be quite the opposite.

We have five men and four trucks who devote their entire time to taking care of service complaints and during the year of 1939 the cost of maintaining these men and trucks was approximately \$15,000. This is an average per customer of approximately \$1.35 per year and while this may seem high, it must be remembered that we have worked this out over a long period of years and we have found that it requires so many men to adequately take care of so many customers.

The Right Number of Men

With any less men the handling of service calls is delayed, with the resulting dissatisfaction of the customer, while if you have too many men, the problem of transportation and mounting service costs immediately projects itself. We, of course, have a large number of men who are available for work other than the job on which they are regularly employed. These men are used in cases of emergencies that can and do arise in connection with the gas business.

We have found that selecting the right personnel is a problem of extreme concern. The man must have a pleasant personality but still he must not be of the garrulous variety. Neither can he be one who is dissatisfied with the work you have offered him or who feels that the work he is doing is beneath his dignity. He must be able to take the things that the customers say to him without resentment but he must at the same time respect his company to the point where he will defend it to the best of

his ability, this of course being done in a tactful, diplomatic way. In fact, there are so many qualifications that men employed in service work should have that it is not possible for us to hire a man and immediately allow him to contact our customers. We go to considerable lengths before employing a man, in checking his past record, his personality and his ability to get along with others. As soon as we hire him he is then put into training and before he is qualified to handle service calls on his own account he must spend months and sometimes years in our meter shop, on our meter setting trucks, often supervising labor crews in laying mains and running services, during all of which time he is absorbing the company's policies, attending safety meetings, and getting himself in the proper frame of mind to best fit himself for our work. We feel it important that a man's pay be sufficient so that he will not be disgruntled and unhappy. As he progresses and his work becomes more valuable to the company, he should be encouraged by being given additional pay and to feel that he is being given every opportunity for advancement, for which we expect him to give us his conscientious efforts.

Promptness Is Essential

It is hardly possible to tell you how service calls should be handled. We know one of the most important things, however, is promptness in attending to them. A year and a half ago we inaugurated, or I might say revised, a system for checking back on service calls, that has been most helpful to us in proving the effective-

ness of the work of our service men. From the log sheets on which all troubles are recorded as they are received, questionnaire cards are sent to every tenth customer who has made a service complaint. On this card we ask them to signify whether or not the call was satisfactorily handled and to mail this return-postage-free card with their comments. From total mailed last year we received back 705, and of this number only 15, about 2%, said that the complaint was not satisfactorily handled. As you can see, this percentage is very small.

Qualities Service Men Need

The men answering service calls must know their business, know all about the product with which they are working, and know all it is necessary to know about the appliances that they may be called to work upon. The service man should, of course, be sympathetic with the customer; however, only so far as he can do so without criticizing the company. We cannot afford to use a man who "flies off the handle" or who likes too well to hear himself talk. If an error has been made in employing a man who subsequently proves to be not suited to the work he is in, this man should be released because he is probably in the wrong kind of work. We do firmly believe that in so far as is possible, men with fair educations should be employed and that they should be gentlemanly fellows and good citizens. They should have a well-developed sense of fairness and always be willing to listen to the other fellow's side of the story. They should be able to reasonably pass on the merits of the

particular situation at hand and act accordingly.

Unless parts are used, service calls, day or night, are answered without cost to the customer, so it is obvious that this end of our business must be operated from the profit made from the sale of our product. Due to the way your customers are located, we do not know and are not suggesting that you attempt to handle service calls free of charge but we presume that the circumstances of each such call made by you is taken into consideration and only charges are made when they properly should be.

Your customers have got to enjoy, at least to an extent, doing business with you for if they don't, they can usually find some service to replace yours that will have elements about it that is to their liking. After the original sale has been made the only contact your customer has with your firm is usually through the service representative, either in the person of a tank wagon salesman or the man who answers the complaint that the appliances are out of adjustment or something of a similar nature.

The Influence On Your Business

Be sure these men are representing you in the manner they should. Be sure that they are contented and that they are at all times willing to do just a little bit more for you and your customers than is expected of them. If they will do those things, your business will be bound to prosper. The service you are able to give to the customers you now have will have a more far-reaching effect on new business than any other one thing!



The banqueters clearly show that the Birmingham meeting was a success.

Southern Section in High Gear

By CRAIG ESPY

● The expanding activities of the Southern Section, L.P.G.A., call for more officers, so two new vice chairmen were added to the roster in formal voting at the Birmingham, Ala., meeting, March 29-30. New officers elected are: chairman, Louis Abramson, president, Petrolane Gas Corp., New Orleans; vice chairman, Herman Paris, president, Georgia Butane Gas Co., Sandersville, Ga.; vice chairman, K. H. Koach, general manager, Green's Fuel, Inc., Sarasota, Fla.; secretary (re-election), R. L. Edwards, president, R. L. Edwards & Co., San Antonio, Texas. Members of nominating committee were Dolph Jansen, Jr., Servel, Inc.; M. H. Nabors, Shell Oil Co., Inc.; W. W. Banks, Dallas Tank & Welding Co.; Ben Meyers, Miami Bottled Gas Co.

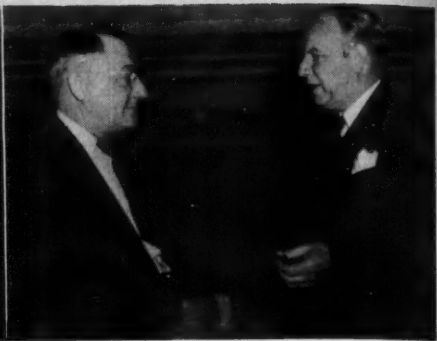
Events moved swiftly during the two days of the convention, paced by Chairman M. E. McKay and Secretary R. L. Edwards. Two full mornings were given over to inspection of exhibits. Exhibits were closed down for afternoon sessions, opening

up again later to good attendance.

There apparently was no doubt in the minds of the delegates to Birmingham that this was the best meeting ever held by the Southern Section. It broke attendance records; broke the record in number of exhibits, and presented a stronger program.

Chairman McKay, Secretary Edwards and National Association Secretary Frank Fetherston each invited non-members to join the Association explaining that the Southern Section of L.P.G.A. has the smallest per cent of members of any section. Since the annual meeting of L.P.G.A., there is available a \$10 membership. Write Frank Fetherston, Liquefied Petroleum Gas Association, New York City.

Exhibitors—there were 33 in all—spoke very favorably about the generous and genuine interest accorded the exhibits. Salesmen were kept busy



Some Were Serious, Some Were Gay at Birmingham



demonstrating products and not a few substantial orders were placed.

This was the first convention of the Southern Section at which special effort was made to entertain the wives. Mrs. M. W. Bagwell chairmanned the affairs for the ladies, being assisted by Mrs. M. E. McKay and others. Bridge and sight-seeing were featured.

Chairman McKay referred to Frank Fetherston as "energetic, adroit, protective and thorough" in introducing him for a talk on "Your Association's Work." Frank pictured the progress of the Association in membership growth, sectional activities, what is being done to assist regulatory bodies in designing practical and uniform rules and regulations. In giving an

invitation to join the Association, he said, "The Association is not so concerned about your money, but wants your interest."

"You can be a champion every day you go on the job, in whatever undertaking you are engaged in, by helping others and by doing a good job," said Karl Landgrebe, vice president, Tennessee Coal, Iron and Railroad Co., Birmingham, as he concluded his remarks dealing with "The South and Its Possibilities." He discussed the rapid development of the South, the humanizing efforts of large industrialists, development of new products by research, adjustment of overproduction of certain farm crops and many other phases of Southern progress which have advanced living standards.

ON OPPOSITE PAGE, Top Row, left to right: F. R. Fetherston, Secretary, L.P.G.A., New York; Hugh White, Alabama Public Service Comm., Birmingham; M. E. McKay, Chairman, Southern Section, San Antonio; R. L. Edwards, Secretary, Southern Section, San Antonio; E. C. Sorby, George D. Roper Corp., Rockford, Ill.

Second Row: J. D. Newcomb, Chief Boiler Inspector, State of Arkansas, Little Rock; W. P. Thomas, Louisiana Public Service Comm., Baton Rouge; J. Woodward Martin, Lone Star Gas Co., Dallas; Willard M. Ware, Gas Oil Products, Inc., Coral Gables, Fla.; K. H. Koach, Green's Fuel, Sarasota, Fla.; Walter H. Hoagland, Shell Oil Co., Inc., St. Louis.

Third Row: P. C. DeBardeleben, Selma, Ala.; L. H. Bell, Modern Gas Co., Marianna, Fla.; B. T. Harris, Butane Gas Co., Little Rock; M. S. Hitchcock, American Meter Co., Birmingham; J. W. Harper, Standard Gas Equipment Co., Vicksburg, Miss.; W. P. Thomas, Louisiana Public Service Comm., Baton Rouge; E. L. Mills, The Bastian-Blessing Co., Chicago.

Bottom Row: W. A. Baden, Anchor Petroleum Co., Tulsa; L. I. Hall, Rochester Mfg. Co., Inc., Rochester, N. Y.; J. P. McKay, Mississippi Butane Co., Jackson; L. J. White, Southern Steel Co., San Antonio; Dolph Jansen, Jr., Servel, Inc., Evansville; John A. Fowler, Gas Equipment Supply Co., Atlanta.

J. J. Kropp, Ralph N. Brodie Co., Inc., said that metering LPG is not a panacea or cure of all evils. But metering does have a very definite place and can be of invaluable service to every dealer large or small as definitely established by those using meters.

Metering, he affirmed, affords a positive means of maintaining accurate record of all receipts and disbursements. . . . measures each gallon and keeps a record of it . . . provides a splendid medium for extending sales . . . strengthens customer goodwill and confidence . . . protects dealer and employee interests because of positive control of receipts and disbursements . . . metering equipment which includes the delivery printing device adds dignity to the dealer's fuel service . . . makes the customer think service is in class with other

Standing or Sitting, LPG Was the Theme



household utilities . . . in other words, metering means "no more guessing."

Economic growth of the South requires that freight rates be adjusted and equalized, said Hugh White, president, The Alabama Public Service Commission as he gave the substance of the fight launched against unfair and unequitable freight rates and urged that the South be given a chance at the Eastern markets.

ON OPPOSITE PAGE, Top Row, left to right: E. J. Davis, Gates Rubber Co., St. Louis; D. S. Johnson, Ralph N. Brodie Co., Inc., Oakland, Calif.; J. J. Kropp, Ralph N. Brodie Co., Inc., Dallas; D. F. Jacob, West Alabama Butane Gas Co., Demopolis; Fred LaFortune, Warren Petroleum Co., Tulsa; G. E. Trees, Anderson Stove Co., Anderson, Ind.; P. J. Hoagland, Warren Petroleum Co., Tulsa.

Second Row: W. S. Christopher, Georgia Automatic Gas Co., Atlanta; W. B. Wight, Consumer's Gas Co., Albany, Ga.; H. R. Pierce, Sprague Meter Co., Davenport, Iowa; Quentin Jones, Butane Gas Co., Houma, La.; G. H. McFadden, Ohio Foundry & Mfg. Co., Steubenville, Ohio; A. B. Purdon, Central Georgia Gas Co., Statesboro; Glen E. Hanaford, The Bastian-Blessing Co., Chicago, cutting meat cooked in a demonstration, surrounded by C. V. Alexander, Tennessee Enamel Mfg. Co., Nashville; F. A. Palmer, Sprague Meter Co., Houston; H. R. Pierce, Sprague Meter Co., Davenport, Iowa.

Third Row: N. A. James, N. A. James, Inc., San Angelo, Texas; Gene McDonald, Servel, Inc., Evansville; Field Foster, Lane Star Gas Co., Dallas; Joe Oberkamp, Ozona, Texas; Victor T. Mavity, Southern Liquid Gas Co., Dothan, Ala.; Ralph M. Sloan, Smith Meter Co., New York; N. A. Evans, Pressed Steel Tank Co., Milwaukee; G. O. Tate, Smith Meter Co., Dallas.

Bottom Row: R. E. Cecil, Wm. B. Scaife & Sons Co., Oakmont, Pa.; C. M. W. Rind, Jr., Pittsburgh Equitable Meter Co., Memphis; C. C. Hughes, Hydro Gas Service Co., Tallahassee, Fla.; Herbert L. Bohon, Tappan Stove Co., St. Louis; E. S. Sedlachek, Wm. B. Scaife & Sons Co., Oakmont; W. W. Banks, Dallas Tank & Welding Co., Inc., Dallas; W. C. Gates, Automatic Gas Co., Greenville, Ala.; Inge Grant, Wyatt Metal & Boiler Works, Dallas; Thad C. Fowler, Fowler Butane Gas Co., Hattiesburg, Miss.

Chairman McKay said Carl Sorby, (George D. Roper Corp.), "breathed more life into a gas range than Edgar Bergen did into Charlie McCarthy."

"Last year, you of LPG sold more domestic gas ranges than the electric industry sold electric ranges . . . but don't get self-satisfied. Now is the time to put on more sales 'steam,'" said Carl. ". . . People you do business with can only evaluate your fuel in relation to the character of gas appliances you sell. (Self evident point: sell good ranges.) Actionize the appliances you sell by connecting them up on the sales floor. . . . Fill your sales floor with appliances you sell. . . . Put merchandise where prospect can see it, feel it and operate it. . . . Adequately pay your salesmen."

Walter Hoagland's (Shell Oil Co., Inc.) paper sought to re-impress the industry with the physical characteristics of butane, iso-butane and propane. With a "blowup" chart he showed vapor pressures of any mixture of gases at any temperature. An analysis he gave illustrates what happens to the contents of a buried storage tank when fueled and refueled with a mixture of 70% butane and 30% propane having a 40-lb. pressure of 60° F. with respect to mixture ratio and thermal value of the gas when the tank is full according to code, when it is two-thirds full and when it is one-third full and then is refueled six times.

"The effect of change in the calorific value of the vaporized fuel on connected gas appliances," he said, "is very important."

He gave remedies which will aid



From left to right are shown A. H. Menuet and Clara Gartman, of the Skelly Oil Co., Kansas City and Tulsa, respectively; Herman Paris, Georgia Butane Gas Co., Sandersville, Ga.; J. W. Vaiden, Skelly Oil Co., Tulsa, and T. G. Tackett, National Butane Gas Co., Memphis.

in eliminating the burden of excessive service calls and gas failures:

Be sure to bury tanks at least two feet below frost line.

Use extreme care in selecting size of tank with respect to connected gas load you expect to put on tank as customer buys more appliances.

Adopt a scale of underground storage tank sizes, keeping in mind definite load of cubic feet per hour and climatic conditions in your territory.

It is important to keep tank more than 50% full always in cold weather.

During extremely cold weather do not give each underground storage tank a "shot," because this relief by increasing the vapor pressure is only temporary. Fill the customer's storage tank to the maximum code limits of each respective tank.

Adopt a mixed fuel, preferably a 70-30 mix for year-around operation. In the case of Class "A" storage tanks which have a working pressure of 80 lbs. per sq. in. according to present code you cannot use a 70-30 mix. However, with tanks that are available today, having a working pressure of 103 lbs. per sq. in., it is safe and satisfactory to use a 70-30 mix for general purposes. A 70-30 mix will give you a fairly uniform fuel in se-

vere weather, again providing tank is kept more than half full.

Adopting a standard mixed fuel for year-around operation will reduce service cost of adjusting appliances.

Heat exchangers, in Mr. Hoagland's opinion are the major improvement to be recommended at this time. Their use will eliminate gas pressure failures and the tank can be practically emptied before re-fueling.

He recommends propane if heat exchangers are not used.

The remedy for condensation in gas supply lines from the storage tank to the customer's appliance is to put in drip pockets to accumulate the liquid if it cannot be drained back to the storage tank. A second method is to pitch all gas supply piping back to the storage tank so that it can't accumulate in the supply line.

He advised that a nominal service charge be put into the cost set-up to be added to cost of customer's fuel.

Most dealers, he said, are selling fuel too cheaply, not having a minimum allowance for minimum service.

The "question box" conducted at the closing session provoked discussion on many phases of the business.

Through a Woman's Eyes

LPG Spells Enchantment

I AM sorry to have been so seemingly recalcitrant about writing in re: feminine viewpoint on butane and its uses, but my talents for this sort of thing are somewhat dubious, at best, and I never feel that I have anything of great interest to impart.

Since I do no field work, I don't possess a sales viewpoint on prospects or customers. I make—and cultivate—their acquaintance as names, and upon actual contact I find myself viewing them as old friends. Hence, my knowledge of the business is, more or less, gleaned in a vicarious manner, giving me the feeling, in a measure, of merely helping them to choose the instruments and appliances that help them to an attainment of economical—and yet pleasurable—essentials. And they seem to agree that the feeling is mutual.

Our greatest pleasure in this business has been derived from the fact that, upon contact with a prospective buyer, we find that, to all practical extent, our advance advertising has been done by people who have already



"J. M. Sowards is my husband, and the owner of the business. He attends to sales and I run the office—or, it runs me," says Mrs. Sowards.

● MRS J. M. SOWARDS, Texarkana, Ark., in a recent letter, has entertainingly told of the impressions of a woman engaged in the LPG industry. The enthusiasm and the unusual viewpoint of this feminine opinion is presented here with confidence that our readers will find therein many a helpful sales example and argument.—Editor.

purchased and are so enthusiastic they want all their friends to have it and will even, in a spirit of magnanimity, generously concede it to their direct enemies. And once it is installed, the greater majority of purchasers will burn their first tank of gas in a third of its usual time, by demonstrating it while they extol its virtues.

We love that, for there is no source of satisfaction to a dealer as great as a complete list of satisfied—and self-

advertising—customers. That hits par!

Aside from the possession of a self-sustaining and lucrative concern and this business of buying and selling, as we grow, we add constantly to our collection of pleasant and amusing experiences.

For instance, there was the vicinity we went into, where butane was hardly known or tried. We installed a range with a demonstrator cylinder and 25 cents worth of butane gas.

Amazing Record

After ten days of use in which the woman cooked three meals a day for nine people and baked all her favorite recipes, and canned three bushels of fruit, and allowed a friend to can two more bushels of fruit on the range, the housewife gave a party and invited our entire personnel and 23 neighbors for a demonstration.

It was her husband who asked me if we had piped angel food cake into the house. He further stated that we had robbed him of his anticipation of Heaven by removing his idea of It as being the only place one received all the angel food one could consume.

Contentment Comes

It was from this demonstration that we sold the woman who later asked me if I had any idea how much enchantment a butane system could lend a river plantation. She explained by saying that for 22 years she'd been forced to live on the river and never once, in all that time, had she given up the struggle to sell out and leave; but since the installation of butane gas, her husband had had to purchase a young colt to break and train, so as to have on hand something from which to get resistance in a fight.



The office where Mrs. Sowards gleans at first hand a rare insight of consumers' reactions to butane gas.

I mustn't forget the gentleman who, by way of explaining to me why his first supply of gas disappeared so rapidly, said: "Well, I just let one stove burn all night in my room, this bitter weather. But I don't sleep much. I just lie there and watch it burn, and say, 'Go on and burn, you little sucker! I may not be able to spit in you but I don't have to throw another log on you, either!'"

And another who swore it was cheaper to burn butane than stand the cost of the deterioration on his muscles in carrying in a log and throwing it on the fire. And again and again.

Butane Eliminates Manpower

One lady on our list, the mother of six sons, very pithily remarked: "It's not the convenience of our system that impresses me most. With six boys, my wood was practically piped into the house, anyway. It's the beauty and the cleanliness it gives this process of cooking food enough to fill seven men, and the fact that a man underfoot isn't a necessity in having a warm house!" However, her husband's point of view was that it made a perpetual clean-up-week of his life. He contended that all the things he'd been successfully postponing for years, such as new bathroom, papering and painting, etc., he was forced to do now because butane had a tendency to jog into life again his wife's ambitions for physical comforts.

My favorite story is of the woman who had asked me to work out an average cost per day for a period of six months on her gas consumption—which covers her lights, fuel for heating, cooking and refrigeration—and who, upon receipt of the actual fig-

ures, exclaimed: "I could be sentenced to the 'pen' for life for intent to defraud and theft with fire-arms, for robbing poor Jerry of the money I've spent, just for household expenses, in the past ten years!"

The Way a Woman Feels

I seem to have waxed a trifle garrulous on this—and to have arrived nowhere in particular. This is not exactly my metier, and you should have realized that any woman's point of view on any matter, would naturally prove anecdotal, in the end. Perhaps it may contain some germ of thought that will assist you. If so, I'm glad to have helped—if not, one always enjoys the retelling of one's favorite stories, anyway.

We'll always be here, on the same spot. This butane business seems to have a tendency to get into the bloodstream and hold you. I'm even trying to sell us a system and a farm to go with it, since, as one of our customers so aptly puts it, "Butane has certainly taken away the drawbacks to living on a farm, and made them into most inviting incentives."



Kool Kitchen Gas Co. to Invade Michigan Upper Peninsula

The Kool Kitchen Gas Co., with headquarters in Oostburg, Wis., has announced its intention to install a 15,000-gal. bulk storage bottled gas plant at Iron River, Mich., during the current year. It is expected that this plant will serve as a distributing station for the entire Upper Peninsula area, according to J. J. Wilke, sales representative who has been assigned to that district. Among the principal cities to be covered are Eagle River, Crystal Falls, and Menominee. It is now the plan to fill bottles at the Iron River plant.



The speakers' table at the S.A.E. meeting in Los Angeles, May 10.

Engineers Visualize Butane's Future

WITH "Butane vs. Diesel" as the featured topic of the evening, more than 250 men gathered at a meeting of the Society of Automotive Engineers in Los Angeles, May 10. Representatives of the leading oil companies, transportation companies and automotive manufacturers listened to the three-hour discussion under chairmanship of E. W. Templin.

Presenting arguments for the use of Diesel under the title "The Modern High Speed Diesel Motor," C. G. Anthony, vice-president of Pacific Freight Lines, Los Angeles, gave a thorough discussion on the use of this fuel. His subject matter was based largely on the experiences of his own company, operators of a large fleet of trucks, both light and heavy duty.

Answering Mr. Anthony's discus-

sion of Diesel were E. E. Tattersfield, president of the Electric and Carburetor Engineering Co.; A. G. Bodine, chief engineer, American Liquid Gas Corp.; and C. L. Parkhill, vice-president, Parkhill-Wade, all of Los Angeles. With three short papers these men covered the history of the industry, its growth and its possibilities.

Mr. Tattersfield's paper, titled the "History and Future of Butane As a Motor Truck Fuel," gave an interesting picture of the growth of the industry and how important the use of butane is to automotive transportation. In summing up his article Mr. Tattersfield pointed out that to be entirely successful the butane engine of the future should have:

1. From 8 to 10-1 compression pressure ratio (to utilize fully 100%

to 110% octane rating). 2. Crank shaft, connecting rods and all bearings constructed to withstand pressures thus created. 3. Extremely cold intake manifolding (refrigerated if possible to increase volumetric efficiency). 4. Ignition systems that will operate on the above ratios and

give total of 100,000 miles of service.

Mr. Parkhill's paper dealt with the "Utilization of Butane In Heavy Duty Automotive Equipment." In it he discussed many of the important points in the use of butane for automotive equipment, emphasizing the economic phases of the subject.

Practical Analysis of Combustion and Chemical Characteristics of Butane

By A. G. BODINE

Chief Engineer, American Liquid Gas Corp., Los Angeles

THERE exists in our natural surroundings many substances which have what we call "borderline characteristics." The most noticeable features of these borderline characteristics are the manners in which these substances must be handled. A very enjoyable example of these borderline characteristics is a dish of good ice cream. We know that if we allow the dish of ice cream to sit before us on the table, it will easily turn to liquid. For practical purposes, we can say that ice cream is a borderline between liquid and solid. A relatively small amount of cooling will solidify it and a relatively small amount of heating will liquefy it.

Another substance of borderline characteristics is that known as liquefiable petroleum gas. This gas exists at the borderline of being a liquid. That is, at normal atmospheric temperature, this gas will become a liquid when subjected to a moderate pressure. And if the temperature is sufficiently low, in other words, somewhere below the freezing point of wa-

ter, this gas will turn to liquid without the urging of pressure. To carry our far-fetched analogy to the extreme we can say that an Eskimo could in the dead of winter, carry a dish of ice cream all day without its melting, and in his other hand he could carry a bucket of liquefied petroleum gas, in liquid form, without a lid.

In other words, liquefiable petroleum gas is not a freak. The physicist explains it by saying that since its molecule size is about half way in dimensions between the molecule size of natural gas and the molecule size of gasoline, it will have many properties half-way in between the recognized properties of natural gas and gasoline. By the same token chassis grease ranges between engine oil and tar or paraffin.

The physical and chemical characteristics of the liquefiable petroleum gases (commonly known as "butane" and consisting of a mixture of butane and propane) gives this type of fuel a number of advantages as a motor fuel.

We can make a quick practical an-

alysis of some of the important properties of this fuel, as a motor fuel, by reviewing the cycle of operation of an engine.

Starting with the intake stroke we can trace the passage of the fuel from the air-fuel mixer. Since we are mixing two gases, the mixing device need not have a high restrictive effect nor does it require an accelerator pump to "wet down" the inside of the intake manifold. The low molecular inertia and specific gravity closer to that of air makes it unnecessary with this fuel that the intake manifold have any obstacles for the purpose of turbulizing the mixture. In other words, the manifold can be perfectly streamlined and can be as large as desired, without of course, overlooking possible ramming effect. It is of course unnecessary to heat the manifold and thereby lose efficiency.

No Fuel to Vaporize

As for the compression stroke, there being no chance of the presence of liquid fuel, we can expect a fairly close adherence to a true adiabatic compression curve. That is, there is no fuel to be vaporized during the compression stroke.

Without a doubt the most important phase of the cycle is the combustion process. The physical characteristic of a good micro and macro mixture, that is, even texture and balanced distribution of the charge, give such a smooth flame propagation that spark plug location is not critical with butane. From the time of ignition on to completion of combustion the rate of combustion can, for practical purposes, be controlled by combustion chamber turbulence and temperature.

The actual combustion takes place in very few steps. If the combustion could be halted at any instant we would find a very small percentage of "in between products." Technically we can say that the chain reaction of combustion of this gaseous fuel consists of very few phases and will not easily decatylize or form crooked flame fronts and cause uneven or rough pressure rise. The simple combustion process of this gaseous fuel gives a very high natural antiknock value which is of prime importance in the modern trend toward higher mean effective pressures and higher thermal efficiencies.

With a reasonable amount of turbulence the inherently simple combustion is completed early in the expansion stroke. Therefore we can expect a minimum of heat loss during the early part of the expansion stroke.

Since the liquefied gases are composed of a small variety of chemical compounds, the possibility of the butane engine's being sensitive to its fuel is rather remote.

In quick review of the salient features of the gaseous motor fuels as compared with liquid motor fuels we can safely say that their mixture with air is more uniform, absorbs less heat at important phases of the cycle, has a lower luminosity heat loss, burns more evenly and burns more completely



A. G. BODINE

without the formation of interstage oxidation products such as lacquers and gums. If for no other reason than the higher hydrogen percentage, we can expect more heat units from a pound of air as well as from a pound of fuel. We do not have to sacrifice power output for fuel economy.

The field of future improvements in the burning of this fuel in internal combustion engines will no doubt include liquid fuel injection for utilization of the latent heat of vaporization of the fuel and improved combustion chamber features to give proper flame propagation with far leaner mixtures.

Since this paper is being presented primarily for a discussion of the comparison between butane and Diesel fuel for motor truck use, I should like to present a few topics which might be used in such a comparison.

A Comparison of Fuels

The first is mechanical efficiency. From this standpoint the butane engine has the advantage of not requiring an excessively high compression ratio with its resulting high friction.

The second point is the important matter of dissociation, or incomplete combination of exhaust products. This means incomplete utilization of the heating value of the fuel. Since, with trucks, power output is of prime importance, the engine must operate with as near as possible complete utilization of the charge space in the cylinder. The problem with the Diesel in this respect is to obtain complete utilization of the air in the cylinder without having localized zones of excessively rich mixture during the important phase of the expansion stroke. As

can be seen in common research data, a high compression engine requires a mixture only rich enough to represent 100% utilization of the air in the cylinder to result in only 80% completion to carbon dioxide at the beginning of the expansion stroke. The important point is that this condition gets worse with higher temperatures and pressures, thus limiting the extent to which the peak pressure can gain over the compression pressure. Much to our satisfaction, we find that the higher allowable compression ratios, and leaner allowable mixtures, for the liquefiable gases are slightly below the severe range of dissociation.

We can safely say that, recognizing thermal efficiency of expansion ratio, mechanical efficiency of high pressure friction, and chemical efficiency of dissociation, the liquefiable petroleum gases allow a compression ratio which is very near to the highest possible efficiency for the utilization of hydrocarbon fuels in the internal combustion engine as commonly known today.



Economy Gas Co. Opens New Bulk Plant in Texarkana

The Economy Gas Co., of Texarkana, on the border line between Arkansas and Texas, has recently opened a bulk plant for butane on East Ninth St. and the Missouri Pacific tracks. The plant has a capacity of 16,000 gals. and will provide the company with sufficient stock to serve the wide area in which it operates. Shipments of gas are received in railroad tank cars.

C. C. Fricks is the owner of Economy Gas Co. He has been a pioneer in the industry and has lived in Texarkana all his life, having engaged in the electrical contracting business before obtaining a franchise for the sale of LPG.



The auditorium where the West Coasters will entertain National Equipment and Appliance exhibitors.

Pacific Coast Section Will Hold Exhibit, Santa Barbara, June 27-28

FROM the advance interest shown in the forthcoming First Annual Pacific Coast Liquefied Petroleum Gas Exposition, billed for Santa Barbara, Calif., on Thursday and Friday, June 27-28, there will be a record attendance. Sponsored by the Pacific Coast Section, L.P.G.A., and featured as the principal event of its June meeting, the exhibit of LPG equipment and appliances is attracting national as well as Sectional attention from manufacturers, Association members and prospective guests. The dates have been changed to one day later than those originally announced to permit guests a week-end visit in Santa Barbara, if desired.

According to C. L. Parkhill, Sectional chairman, plans are already complete to care for a capacity audience at the two-day event.

Departing from past practice, the

Exposition will not be housed in a hotel, but instead will be held in the Santa Barbara municipal auditorium. Not only is this a spacious building, but its facilities are exceptional in that it is surrounded by a large, paved parking area which will permit the exhibit of such heavy equipment as trucks, tractors, tanks, etc., for the first time. Accordingly, special exhibit stalls are being placed in this area for the display of such equipment. These will be 15 ft. by 25 ft. and it is pointed out that stall exhibiting privileges will be accorded only to such exhibits as cannot be normally housed in the auditorium proper.

The inside floor contains a total of 11,700 sq. ft. of meeting and display space. The floor has been divided into large booths, 12 ft. wide by 8 ft. deep. These booths will be available in singles, doubles or units to meet

exhibitors' needs. The end aisle booths are doubles, 16 ft. by 12 ft.

While exhibiting privilege is limited to members, it is emphasized that attendance at the exposition and meeting is open to all interested parties. No registration or admission fees will be charged. Both in attendance and exhibits, the affair will bring together a cross section of the entire LPG industry and its customers.

The program, opening at 9:30 each morning, follows:

Thursday, June 27th

MORNING:

Registration of exhibitors, members and guests. Official Exposition opening and tour of exhibits.

"Welcome to Santa Barbara"—Patrick J. Maher, mayor of Santa Barbara.

Business Session, Pacific Coast Section, L. P. G. A.

"How the National Association Serves the Industry."—J. Woodward Martin, president, L.P.G.A.

Adjournment for luncheon and tour of exhibits until 2:30 p. m.

AFTERNOON:

"The Probable New California Industrial Accident Commission Code."—George Prussing, Union Oil Co. of California.

Discussion of Mr. Prussing's paper.

"Successful Appliance Sales, Service and Installation Methods."—Harry I. Horn.

Discussion of Mr. Horn's paper.

"Transportation, Storage and Handling of Butane"—C. E. McCartney, Petrolane, Ltd.

Discussion of Mr. McCartney's paper.

Adjournment and tour of Exposition until 11 p. m.

Friday, June 28th

MORNING AND AFTERNOON:

Tour of Exposition until 2:30 p. m.

"Problems of Pumping LPG."—G. J. Harman, Harman-Pacific Co.

Discussion of Mr. Harman's paper.

"The American Gas Association Testing Laboratories and Their Relation to the LPG Industry."—F. A. Allen, Assistant Supervisor, Pacific Coast Branch, A.G.A. Testing Laboratories.

Discussion of Mr. Allen's paper.

"Building Fuel Load Through Progressive Space Heating, Water Heating, Refrigerator and Range Sales."—R. G. Logue, Ward Heater Co.

Discussion of Mr. Logue's paper.

Adjournment and tour of Exposition.

EVENING:

First Annual Dinner and Entertainment, Pacific Coast Section, L.P.G.A., at 6:30.

Tour of Exposition, 9 p. m.

Official close of Exposition, 11 p. m.

The "First Annual Dinner" will be held Friday evening in one of California's beautiful and romantic settings, Restaurante El Paseo. The entire patio has been reserved for the association. A feature, through dinner and following, will be entertainment by El Paseo's Spanish Troubadors and the flashing feet of its celebrated dancers and singers in a repertoire of early California dances, songs and music.

Exhibition Space Available

The committee in charge of the event consists of T. H. Ransome, Ben Temple, R. R. Wyker, C. E. McCartney, Frank Culver, Oliver W. Kilham, H. W. Wickstrom, C. L. Parkhill and John H. Kunkel. The last named is Sectional secretary, and all inquiries for exhibition space or hotel accommodations should be sent to him at 1625 S. Alameda St., Los Angeles.

SELLING

There Is One on
Every Sales Force



EVERY sales force has at least one of the following five types. They don't last long, fortunately; particularly when the going gets tough. But while they're around they gum up a lot of sales; and nobody has any use for them. Wouldn't you hate to be classified as one of them?

His Dress Is Unique

Number One is Sloppy Sol. His tie is never quite tied in the middle



Sloppy Sol, the Bohemian Business Man

of his collar. His shoes need a shine, and last year's soup spots are still to be seen on his vest. He didn't bother to shave this morning. What was the use? He shaved yesterday. His hair is beginning to get so long it looks like a boyish bob, and he really ought to do something about that dandruff. A herd of elephants walked over his hat, and he must have slept in his trousers last night. Those bags at the knees, as a matter of fact, give him a sort of tired look, as if he's half-way sitting down. And he can't be

bothered about cleaning and trimming his finger nails. What the heck! They just grow out again!

A Thousand and One Tales

Alibi Al is Number Two. He's in the wrong profession. He ought to be some place where he could capitalize on his talent for always having an excuse. He starts in the minute he steps into the office in the morning. His first alibi is for being late, and it is a dandy. It would have to be a dandy because he is late every morning! Then he has a good one thought up to tell the boss about how he happened to muff that hot prospect yesterday, and he begins to lay the groundwork for a good alibi on the one he feels he is going to miss today. Alibi Al never by any chance lays the



Alibi Al—an imagination like Poe's

blame at his own door. Poor guy! He is so busy proving it wasn't his fault he never has time to really get down to the business of selling.



Fussy Frank—All day he's tangled up

All Details — No Sales

Then, as Number Three, comes Fussy Frank. What a man! Or maybe we should write it: "What? A man?" For he is a regular old woman the way he fusses over petty details. He gets himself so snarled up in routine and red tape every morning that he is the last one to get out on the job. Fussy Frank is pretty good when nothing happens to complicate a sale. He can handle a prospect along with the best of them. But let something unusual arise — something not covered by instructions — and he is lost.

Let's Talk About Me

Number Four is a charming person — if you don't mind a loud noise. His name is Loud Mouth Louie. He



Loud Mouth Louie, a one-pronoun man

has talked more and said less in his thirty years of life on this earth than

any other ten men who ever lived. He talks night and day, awake or asleep. And he has only one topic of conversation: himself. To hear him tell it, the art of selling wasn't invented before he came along. The strange thing is: his record doesn't show it. He makes fewer sales than anyone else on the sales force.

It's Bad and Will Be Worse

Pessimistic Paul is Number Five in this forbidding gallery. What a shock his mother must have got when she first beheld that sour puss of his! He was born with it! Nothing is ever right in his world. If the sun is shining and the birds are singing, he



Pessimistic Paul—Such fun at a funeral

wishes it would rain. If it is raining, he wishes the sun would shine. He beefs about everything. He beefs about having too much territory to cover, and when the boss cuts it down, he beefs about having too little. He beefs at his customers, at his commissions and at his product. He beefs about his fellow salesmen. He just can't figure out what the world is coming to: no business, no honesty, no nothing. Pessimistic Paul is such an expert crepe hanger he ought to make a swell undertaker.

Nine Accidents

Which Could Have Been Prevented

By HAROLD W. WICKSTROM

Consulting Engineer, Los Angeles

THE LPG industry is spreading daily into new territories, including small communities, large cities and rural areas. No matter where this expansion leads there is some member of state, county or municipal fire prevention or fire fighting department that is vitally interested in our product, desiring to learn more of its characteristics when subject to fire exposure and the methods of preventing and minimizing fires and explosions.

These men cannot be expected to be mind readers or to know all there is to know about every commodity used under their jurisdiction, and it is up to the members of our industry to confer with these men and give them what we know to help make their jobs easier and equip them with knowledge to prevent danger due to mishandling during fires or accidents. To us who are handling LPG daily, the safe practices are fairly well established but there are many questions that the fireman wants answered.

LPG Not Like Gasoline

LPG is officially classed as an inflammable liquid. This has a tendency to establish it in the mind of the fire fighter as a product that will act similarly to gasoline in a fire. This is the wrong conception, and the technique of fighting a LPG fire is considerably different from that fol-

lowed in subduing a gasoline blaze.

An extensive investigation of causes of many fires leads to the following conclusions regarding such causes and preventive measures.

He Lighted a Match

1. An explosion occurred in the basement of a dwelling. A plumber about to install a gas stove in the dwelling opened a trap door to a basement, looking for a place to run the gas line. He lighted a match to see, with the resulting explosion. Later developments proved that the service man had run his line from the main in the street, set the meter and capped the outlet to the house. He had not tested the service line properly. In bending the pipe to make the connection to the meter, the pipe split, causing a leak which filled the basement with an explosive mixture. Cause — carelessness.

2. A large truck was being loaded with LPG from the field storage tanks. The truck was partly filled when the loading hose burst. The plant operator shut the valves on the storage tank and stopped the flow from the plant. Although the truck was equipped with an internal valve that had to be held open, the truck driver had tied the handle down with wire to ease his duties. When the hose broke he was not near this valve

control and ran. This allowed the full force of a three-in. stream of liquid to emit from the truck tank. This liquid spread and vaporized into a fog and ignited from a nearby boiler. The flame traveled back to the truck and spread to six 15,000-gal. gasoline tanks, one 1000-bbl. crude oil tank, and one wooden oil well derrick. Two 12,500-gal., vertical LPG tanks were in the center of the exposure. The fire lasted for nearly 12 hours before it extinguished itself. These LPG tanks were equipped with heavy flanged valves which withstood the outside exposure without failure. As the pressure increased in the tanks, the safety relief valves opened and blew gas vertically. Occasionally the gas from the safety valves would ignite, but usually the velocity was so high that it had dissipated in the air before it would catch. As the safety valves relieved, the liquid in the tanks cooled, lowering the pressure to a point at which the valves closed. This continued throughout the fire.

Tanks Stood the Test

When the fire was out no damage was found in the LPG tanks except loss of paint. The gasoline tanks, the crude oil tank and the derrick were destroyed. The truck was completely burned, but the LPG transportation tank and fuel tanks were tested, equipped with new fittings and placed into service again, having received no material damage. Cause of fire—defective hose and carelessness on the part of the driver.

3. An existing operating LPG installation required additional storage capacity. Alongside a 10,000-gal.

horizontal tank a second tank of like size was installed. It was desired to interconnect the piping on these tanks. To do so required the removal of several valves on the original tank to make the outlets face the proper direction. The LPG from the original tank was transferred to the new tank with a temporary connection until there were only a few inches of liquid in the tank. The tank was then blown down from the vapor space until the gage showed 0 lbs. pressure.

Dropped Valve and Ran

The mechanic then removed a valve in a 1½-in. dip pipe. Liquid butane came out of the opening, and the mechanic dropped the valve in a snow drift and ran. The small amount of liquid LPG flowed from the opening down a grade to be ignited from an operating water heater. The flame flashed back to the top of the tank and burned from the opening on the tank. One of the openings pointed directly toward a bursting disc in the full tank, resulting in its failure and the ignition of the full tank. The fire burned for several hours until the pressure was so relieved that it was extinguished with wet sacks and the openings were closed. Approximately 1000 gals. of LPG from the full tank were lost. No damage, except that done to the paint and bursting discs, was experienced. Cause of accident—carelessness in having an open flame close by while working on a live tank and too much faith in a commercial pressure gage.

4. A LPG tank truck was discharging into a receiving tank. The union connections had a slight leak

dripping liquid to the ground. A commercial sign painter was being shown where to paint inflammable signs on the truck tank. He inadvertently struck a match on the side of the tank to light a cigarette, which caused the ignition of vapors in the air. He received a singed face. Fire was extinguished immediately with an extinguisher with no damage.

Cause—double carelessness and use of bad order unions.

Delay Caused Trouble

5. A fire extinguisher salesman desired to demonstrate the merits of his equipment to put out an LPG fire. About one gallon of LPG was withdrawn from the storage tank and poured into a flat garage drip pan. The weather was very cold, causing slow evaporation. Interested officials were slightly delayed in getting to the scene of the experiment which was within a closed area surrounded by fences and buildings. When the material was touched with a match, gases that had formed and spread for a distance of 30 to 40 ft. also ignited, causing burns to one man. Luckily the witnesses to the demonstration were all on the windward side of the pan. The fire burned itself out. Cause — carelessness and lack of knowledge of the characteristics of the product.

6. A bus operated by LPG was about to start from its terminal. When the driver put his foot on the starter a fire broke out under the hood. A passing motorist turned in an alarm. When the fire department arrived the driver had used up his fire extinguisher and there was still a

steady fire under the hood that could not be subdued with extinguisher or water. Next bus arrived and the driver asked if the valve had been turned off at the supply tank. It had not, and when he turned it off the fire went out. Damage was confined to wiring and accessories under the hood, a broken windshield and burned paint. Cause—bad order equipment plus lack of knowledge of operating and safety instructions by the driver, and a lack of knowledge of LPG fire fighting by the fire department.

The result of this fire was that every employe was given personal instruction as to the location of shutoff valves, and each battalion chief of the department made a personal inspection of the equipment. Drawings of the various types of coaches were furnished to the fire department, with location of tanks and shutoff valves shown in every instance.

Safeguards for the Future

7. A farmer ran out of domestic fuel after dark. He put his small tank in the back of his car and drove to the field next to a skid tank. Using a garden hose and a leaky connection, he attempted to transfer from the large tank into the small. Gas leaking from the connections ignited from a kerosene lantern being used to light his way. The automobile caught fire, the farmer was fatally burned trying to remove the small tank from the car, and the supply tank mounted on wooden supports ignited. The fittings melted off the tank, and the burning wooden structure heated the tank enough to cause a failure of the tank when it dropped to the ground.

Cause—carelessness and use of improper hose and fittings.

8. A dump truck contractor had a short job and was fueling his fleet of trucks from a transport tank. This tank had no pump on it, and so gravity transfer was resorted to. To speed up the filling the vent valve on the vehicle tank was opened to allow the pressure to reduce. This practice was carried on for several weeks until one morning ignition at the vent valve was caused by a driver lighting a match. No fire extinguishers were available. The vent valve was so located that the flame hit on the body of the dump truck, preventing shutting off of the valve. The tank truck was disconnected and driven away. The flame from the vent valve was deflected to fuse plugs which melted out, and they were so positioned as to point flame at the cab and engine hood. The truck was a total loss, but

there was no personal injury. Cause—carelessness.

9. A small distributor was hauling three small tanks on a flat rack truck. The truck was operated on gasoline and caught fire due to a leaky gasoline line. Two tanks were relieved by fuse plugs melting out, and the third tank failed, exploding. Part of it hit a parked car, but there was no personal injury. Cause—tank failure due to substitution of leaky fuse plug with solid plug and overfilling of container.

Carelessness Chief Cause

The description of these fires brings out one major point. Practically all of them are due to carelessness or lack of knowledge of the characteristics of the product being handled. While these incidents occurred, many millions of gallons of LPG have been safely stored, transported and trans-

TABLE NO. 1. FIRE-HAZARD PROPERTIES

Material	Ignition Temperature deg. F.	Explosive Limits per cent in Air		Vapor Density
		Lower	Upper	
Ammonia (Anhydrous).....	1204	16-16.1	25-27	0.59
Butane.....	805-1058	1.5-1.9	5.7-8.5	1.95
Carbon Monoxide.....	1177-1497	12.5-16.6	71.2-75	0.97
Coal Gas.....	1197-1200	5.3-8	19-31	
Ethane.....	950-1166	3.0-3.3	10.6-15.0	1.03
Ethylene.....	1008-1110	3.0-4.2	14.1-35	0.97
Hydrogen.....	986-1143	4.1-9.5	66.5-80	0.069
Hydrogen Sulphide.....	482-534	4.3-4.5	45.5-46	1.17
Illumn. Gas.....	1094	5-7	21-31	
Methane.....	999-1452	4.9-6.2	12.7-16	0.55
Methyl Chloride.....	1170	8-8.3	17.2-19.7	1.74
Natural Gas.....		4.8-5.0	13.5-15	
Propane.....	871-1090	2.0-2.4	7.0-9.5	1.52
Propylene.....	927-952	2.0-2.2	9.0-9.7	1.45
Water Gas.....		6. -12.5	55-70	

ferred with very few fires or accidents. However, as long as the human element enters the picture, we are bound by the laws of human frailty to have occasional fires and accidents, and it is for this reason we have fire prevention and fire fighting forces.

The accompanying table (No. 1) is abstracted from a compilation of data on fire-hazard properties of certain flammable liquids, solids, and gases by the National Fire Protection Association and published in the January, 1940, issue of *Chemical and Metallurgical Engineering*:

LPG Fire Easy to Fight

To the fire prevention man my suggestion is to look over the field with the LPG distributor and check for infractions of the NBFU pamphlet No. 58 regulations. A liquefied petroleum gas fire is easier and safer to fight than a gasoline fire. The tanks are of heavier construction, and if properly designed, the chance of a tank failure is exceedingly small. Water is the best helper to keep the tank cool and to prevent spread to adjacent buildings. If tanks are equipped with brass valves, fuse plugs or bursting discs, keep clear of the direction to which they point. The safest approach to a burning LPG tank is from the sides and not the ends.

Every fire is an individual problem. In LPG fires there are a few important steps to take, among them the following:

- (1) Determine the location of the leak or source of the burning gas.
- (2) Use water or fire extinguishers

to extinguish the combustible material external to the tank.

(3) If possible, turn off the valves in the tank.

(4) If the fire is from the vapor space in the tank it will burn till the pressure is reduced and it can then be extinguished and the outlet capped.

(5) A pipe wrench and fittings are as important as fire extinguishers to cap the leak after the fire has been extinguished.

(6) If the fire cannot be shut off at the source it can be confined to the opening from which it is burning with no great hazard.

(7) Water to keep the tanks cool is an important medium to control the fire.

(8) Before extinguishing the flame be sure the gas can be shut off to prevent reignition.

LPG is a safe material when properly handled. It is easy to learn how. *Be safe. Don't be careless!*

Southern Steel Issues New Manual for User and Dealer

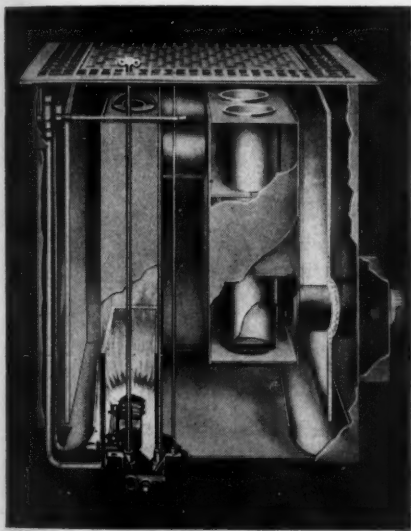
The Southern Steel Co., San Antonio, Texas, has issued the second edition of a manual which details information essential to the installation and operation of its Hydro-Gas System. It is distributed to dealers, service men and to users of that particular system.

Through references to drawings and a table showing the capacity per hour in cubic feet and B.t.u. equivalent through pipes of various sizes and lengths, even an inexperienced person may obtain an accurate idea of the system and how it must operate to result in highest efficiency. In the hands of the user, it forms a valuable check on service work and enables the owner to understand what he may expect.



Hey, there!
Is Sumpthin' Missin'?

"GET IN ON THE GROUND FLOOR" FOR SPACE HEATING PROFITS



There certainly is "sumpthin' missin'" if you aren't giving floor furnaces a major place in your merchandising. And that something is missing right where it hurts most... in your load, in your revenue, in your satisfied customers.

The **WARD FLOOR FURNACE** is safe, dependable, *permanent* heating equipment that "*gets you in on the ground floor*" and brings you space heating profits from now on. *It stays put.*

All models equipped with 100% Safety Pilot for double-dependability with butane-propane gases.

Guaranteed ten years... built for a *lifetime* of heating service... and profit.

Write for our latest catalog



**100%
SAFETY
PILOT**

FLOOR FURNACE

- ☆ No basement necessary
- ☆ Furnace hangs beneath floor
- ☆ Register is all you see

SINCE 1909

WARD HEATER CO. • LOS ANGELES, CALIF.

LPG Sits in on Weights and Measures Conference in Washington, D. C.

THE subject of liquefied petroleum gases will occupy a prominent position on the program of the Thirtieth



DR. L. J. BRIGGS

National Conference on Weights and Measures, to be held at the Bureau of Standards, Washington, D. C., June 4-7.

Four speakers will deal with liquefied petroleum gases on the morning of Wednesday, June 5.

E. R. Weaver, of the National Bureau of Standards, will speak on "Physical Properties." H. S. Bean, of the same bureau, will deal with "Instruments for Commercial Measurement." "Measurement Problems of the Distribution Industry," will be handled by F. R. Fetherston, secretary of the Liquefied Petroleum Gas Association, and Charles M. Fuller, Los Angeles County Sealer of Weights and Measures, will tell about "Contemplated Field Methods for Testing Meters Used in the sale of Liquefied Petroleum Gases." The meeting will be under the supervision of Dr. Lyman J. Briggs, director of the National Bureau of Standards and president of the National Conference, and R. W. Smith, acting secretary of the Conference.

Exhibits of weighing and measuring devices will be displayed in the Mayflower hotel, adjacent to the meeting.

The purpose of these National Conferences is to promote uniform, adequate laws and regulations for the protection of the people and industry in every jurisdiction, and to develop and adopt the most efficient methods of carrying on all branches of the work, with particular attention to specifications, tolerances and tests.

The first National Conference was held in 1905, when a small group of men gathered at the Bureau of Standards to discuss how best to promote cooperation among all of the officials charged with the enforcement of weights and measures laws, to the end that the great differences which then existed among the various jurisdictions might be reduced, and the service placed upon a more uniform basis.

All Sections Represented

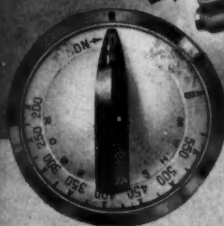
From that small beginning, it has grown in size and importance until delegates representing all sections of the country, convene each year at the National headquarters. Representatives of industry, manufacturers, and others engaged in any branch of weighing and measuring activity, attend, as well as sectional officials.

Experimentation on LPG testing meters is being carried on in Los Angeles on an extensive scale by Mr.

GREATER CUSTOMER USE OF OVEN HEAT CONTROL



with the NEW MODEL BJ
ROBERTSHAW



STUDY THESE FURTHER IMPORTANT FEATURES

Dial combined with double safety plug-type cock, easy to service as an independent gas cock.

(See A in illustration)

Compact. Easily installed. 40 installation positions.

Reset keyed to thermostat—rides free of manifold panel.

New, simplified front calibration, by-pass and pilot adjustment. Can be checked with absolute accuracy at room temperature.

Potented non-clog by-pass key. Accurate and dependable on all types of gas, including Butane-Propane.

(See B in illustration)

Oven valve and thermostat assembly form one unit removable from front without disturbing fittings. Cannot be replaced incorrectly.

Accurate and responsive. Minimum back lash. Co-axial mechanism eliminates lost motion.

Large gas capacity meets all CP requirements.

Potented electric-welded, stainless steel, solderless Diastat. Non-corrosive, over one million in use.

(See C in illustration)

Balanced Beauty Increases Sales Appeal

Gas cock and dial are combined in one unit, operated by one motion. Gas can't be turned on without setting thermostat, nor turned off without bringing it back to off-position. Every oven cooking operation must be done with controlled heat. The automatic advantages of the modern gas oven are automatically extended.

The dial is mounted directly on the range manifold, in line with the gas cocks. The front is thus symmetrical, more beautiful.

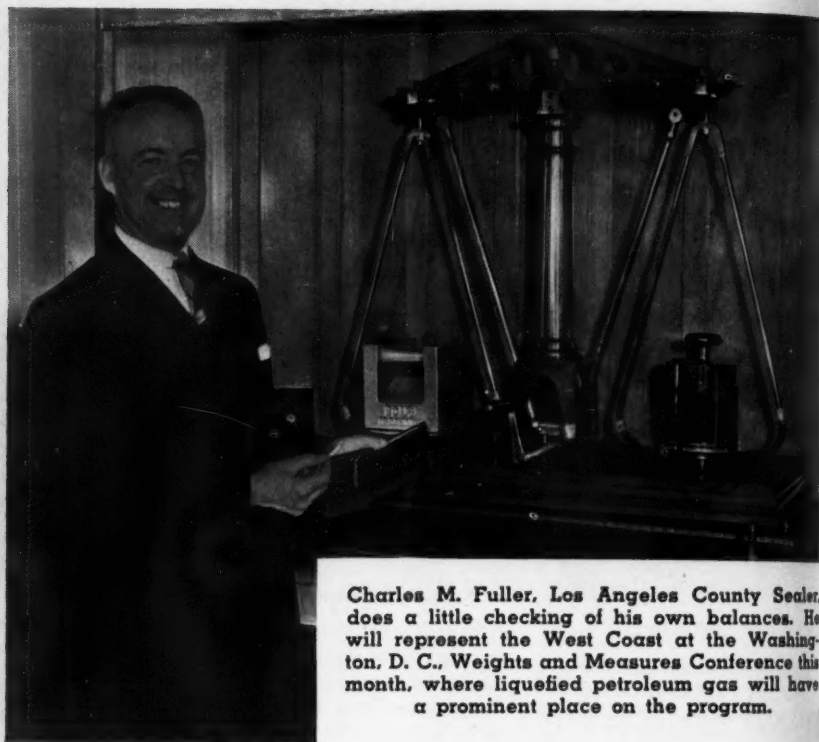
For the manufacturer this model cuts down assembly time and breakage. For dealers it adds further sales power to a nationally preferred control. For the service department it saves time and money by expediting adjustments.

This sales manual tells how to make **MORE INCOME FROM GAS RANGES**. Crowded with effective sales suggestions; 1939's most widely distributed range sales manual. Help your salesmen build business; write for a copy.



ROBERTSHAW THERMOSTAT COMPANY

YOUNGWOOD, PA.



Charles M. Fuller, Los Angeles County Sealer, does a little checking of his own balances. He will represent the West Coast at the Washington, D. C., Weights and Measures Conference this month, where liquefied petroleum gas will have a prominent place on the program.

Fuller's department and cooperation and assistance is being given by members of the industry in the study of this problem. Testing equipment will be built in the near future and tried out in the field.

Mr. Fuller is also the only Western member on the National Conference Committee on Specifications and Tolerances, an important committee of the organization, which is charged with formulating all proposals for regulations to be submitted to the Conference for approval and adoption throughout the United States.

Alley Gas and Electric Co. Has New \$5000 Building

The Alley Gas and Electric Co. has, during the past winter, completed a new two-story, modern structure in Princeton, Mo., which serves as offices and plant for its bottled gas and appliance business and the manufacture of Neon signs. The building cost \$5000 and was specially designed for the two lines of business in which the company is engaged.

After three years as agents for Thermogas, the company now serves 122 consumers, according to Glen L. Alley, owner, and the present year is showing a marked increase in business. Lines of LPG appliances and equipment are carried.

ENSIGN BUTANE CARBURETION

Powerful, efficient engine performance

Butane, in combination with ENSIGN Carburetion Equipment, makes an ideal fuel for Trucks, Tractors, Buses and Stationary Engines. Engine operating expense is lowered and performance reaches new peaks.

ENSIGN Carburetion Equipment for Butane is the accepted standard from coast to coast. For the BEST in Butane Carburetion, always specify ENSIGN!

FOR TRUCKS, TRACTORS, BUSES, STATIONARY ENGINES



Fleet operators know the value of ENSIGN Carburetion Equipment for Butane. The fleet of 25 trucks shown above is ENSIGN Butane-equipped.

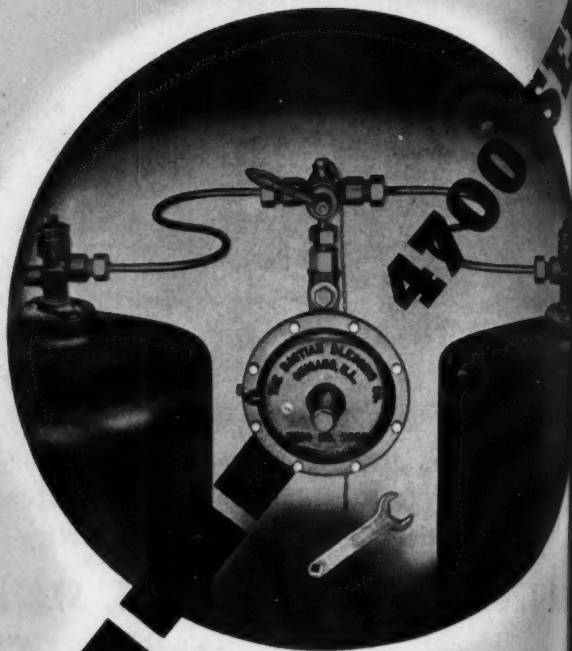
ENSIGN

CARBURETOR COMPANY, LTD.

HUNTINGTON PARK, CALIFORNIA • DALLAS, TEXAS • CHICAGO, ILLINOIS

NEW REGO OUTFITS

For installations using portable cylinders installed at homes, restaurants, roadside stands, institutions, etc.



WITH No. 2500 REGULATOR



WITH No. 2400B REGULATOR



WITH No. 2401 REGULATOR

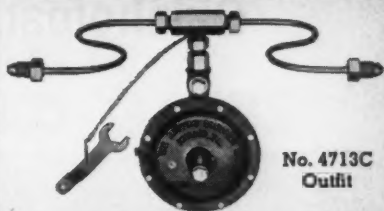
**REGO OUTFITS . . . including
regulator, manifold, pigtails,
wrench and chain**

**. . . with No. 1250R CHECK-VALVE
MANIFOLD** which eliminates ex-
cessive leakage of gas to atmosphere
when an empty cylinder is discon-
nected . . . a dependable and safe system
at relatively low cost.

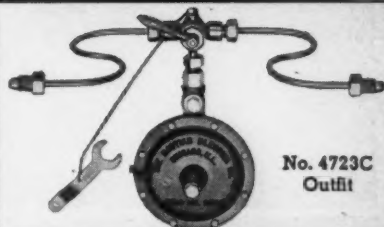
**. . . with No. 2821A 2-WAY THROW-
OVER MANIFOLD** which shuts off one
side of the system as the other side is
simultaneously opened . . . positive shut-
off when cylinders are being changed
over . . . popular for its simplicity and
ease of operation.

**. . . with No. 2432A TWO-VALVE MANI-
FOLD** which affords a positive means of
shutting off either side of system when
changing cylinders . . . meeting the de-
mands of the bottled-gas user for a safe,
dependable system.

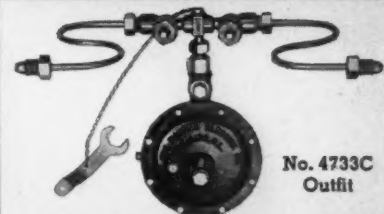
**. . . with No. 2519 AUTOMATIC CON-
TROL MANIFOLD** which provides unin-
terrupted cylinder gas service, automati-
cally supplying fuel from reserve side of
system after cylinder (or bank of cylin-
ders) on service side of system is ex-
hausted or when heavy fuel withdrawal
reduces pressure.



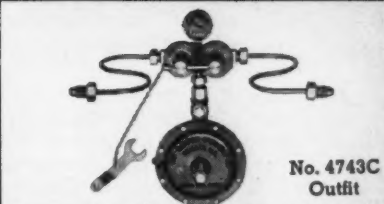
**No. 4713C
Outfit**



**No. 4723C
Outfit**



**No. 4733C
Outfit**



**No. 4743C
Outfit**

Remote Mounted Gauge, No. 4753C Outfit

SPECIFY REGO COMPLETE OUTFITS

The BASTIAN-BLESSING

258 E. ONTARIO STREET CHICAGO, ILL.

PIONEERS IN EQUIPMENT FOR USING AND CONTROLLING HIGH PRESSURE GASES



Oklahomans Discuss Problems

By O. D. HALL



AT TOP: J. C. McConnico, Peppers Gasoline Co., Oklahoma City; R. A. Bryant, Jr., Philgas Department, Phillips Petroleum Co., Bartlesville; J. Edwin Payne, Payne Sales Co., Frederick, and I. E. Grigsby, I. E. Grigsby Gas Co., Oklahoma City.

BELOW (in back row): R. L. Eppe, R. L. Eppe & Co., Tecumseh; Chas. Corken, Corken Pump & Machinery Co., Oklahoma City; W. C. Shields, and (in front) O. J. Green, both of the Oklahoma Liquefied Gas Co., Seminole.

THE newly organized Oklahoma Liquefied Petroleum Gas association, during its first state convention, held in Oklahoma City, April 16, which at first included only dealers and distributors, voted to extend associate membership privileges to representatives of all branches of the industry.

Several liquefied petroleum gas manufacturers, tank fabricators, appliance men and insurance and bond dealers, joined the association at the convention.

At the opening session Floyd Green, assistant attorney, oil and gas conservation department, Oklahoma Corporation Commission, explained the new safety regulations adopted by the commission pursuant to state law, and invited full co-operation from members of the association in securing enforcement. The new regulations are effective as of May 1, 1940.

L. L. Leininger, Oklahoma state tax commission, discussed operation of the Oklahoma tax law affecting the use of liquefied petroleum gases for propelling vehicles over public highways. Roy Templeton, assistant state fire marshal of Oklahoma, sought unified effort in enforcement of fire prevention regulations with relation to butane-propane gases. W. L. Newton, Oklahoma state boiler inspector, was a guest at the noonday luncheon and the business sessions.

A committee of the association, appointed by C. J. Nicklas, president, was authorized by the convention to

FIELD STOVES FIRED With LIQUEFIED GASES

Ransome Field Stoves, for baking, cooking and water heating are especially suitable to the purposes of logging and construction camps, forestry and military services. Fired with either butane or propane, with no smoke, embers or fire hazard. Ruggedly constructed, quickly set up or taken down.

Write for full details.



- At the left, showing how compactly the Ransome Field Stove makes up for ready transport.

★ We are prepared to design and install industrial butane standby plants, public service gas plants, as well as automotive and stationary engine conversions. Your inquiries are solicited.

RANSOME COMPANY

Manufacturers of Forster Torches and Burners

Distributors of Natural and Liquefied Gas Appliances

4030 HOLLIS STREET

EMERYVILLE, CALIF.

RANSOME

confer with the Corporation Commission relative to applications of installers for bonds and licenses under the new regulations. The same committee also was authorized to inquire into the advisability of requesting amendments to the safety regulations to enable butane-propane distributors and dealers to give bond to guarantee that they have complied with all rules, regulations and laws of the state affecting their operations. The committee is composed of R. L. Epple, Tecumseh; Paul C. Took, and J. L. Grigsby, both of Oklahoma City.

Applications for license, surety bonds, and certificates of installation, are to be filed in Room 533, state capitol building, Oklahoma City. Under section seven of the safety regulations, no person shall install any LPG system who has not been regularly licensed by the Corporation Commission. No person shall be licensed until he has given a bond for \$2500.

A certificate shall be furnished by the installer to the owner stating that the installation was made according to rules and regulations of the Corporation Commission.

The blanks for carrying out the foregoing purposes have been placed in the hands of members of the association committee, who are assisting the Commission in determining a proper list of qualified installers of LPG equipment and appliances. Other distributors and dealers also are cooperating in distributing the application, bond and certificate blanks.

Mr. Grigsby, who is association vice president, said that bonding and licensing requirements for dealers and distributors would be a protection against unlicensed and unfair opera-



ABOVE: C. Ralph Jones, Oklahoma Automatic Gas Co., Oklahoma City, a director of the Oklahoma Liquefied Petroleum Gas Association; Ward Morrison, Jr., W. W. Morrison, Jr., Hardware, Geary; and George E. Borelli, Borelli Hardware Co., Okarche.

tions from distributors outside of Oklahoma. These would not give a bond merely to be permitted to cross the border into Oklahoma and sell a few gallons of gas or install a system.

Other speakers at the convention included: J. C. McConnico, Peppers Gasoline Co., Oklahoma City, who outlined processes of separating oil and gases to produce liquefied petroleum gas; Leslie Olson, of Black, Sivalls and Bryson, Oklahoma City, who referred to the co-operation tank manufacturers are willing to give to the distributors; M. L. Sumner, Oklahoma City, insurance counselor, who outlined procedure of securing bonds under the new regulations, and Francis Borelli, Okarche, secretary of the association. The latter talked about advantages of membership.

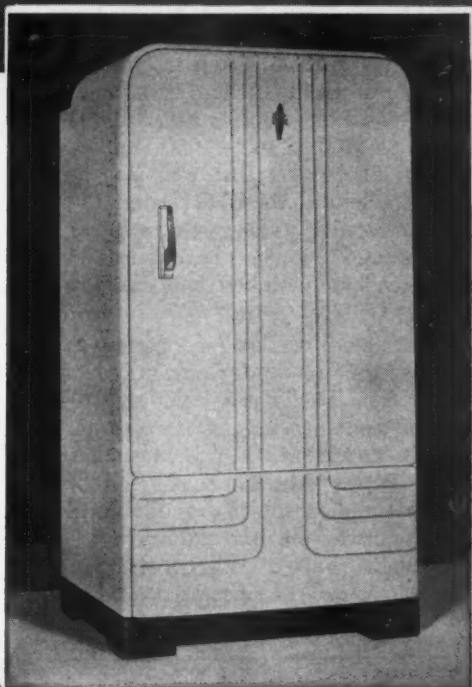
For better business...get behind **GAS REFRIGERATION**

Servel Electrolux operates on Tank or Bottled Gas

Not only can you build a steady income with Servel . . . but this refrigerator for suburban and rural homes will bring your business *plus* profits as well.

Servel Electrolux refrigeration has won an enviable reputation. Its exclusive operating advantages are winning more new customers and increasing load for dealers every year.

Keep pace with the rapidly growing liquefied petroleum industry through gas refrigeration. Servel's national advertising, and powerful dealer backing, will help you sell. Servel, Inc., Evansville, Indiana.



The
SERVEL
ELECTROLUX
Gas Refrigerator

GAS REFRIGERATION:

- Publicizes the Modernity of Gas
- Protects Your Present Gas Load
- Stimulates Sales of Other Gas Appliances
- Builds Load without Extra Investment

FREEZES SILENTLY...WITH NO MOVING PARTS

TEN MILLION COOKS NEED LPG

A STUDY of the acceleration of domestic installations of liquefied petroleum gas for home cooking and the future market for this fuel shows a conservative estimate of families in the United States is 30,000,000, and the number now served by ranges is 19,551,000. From this, it is apparent that the unsold domestic cooking market (now using inferior range fuels) reaches a total of 10,249,000 families. This is the market that well may be said to belong to the LPG dealer!

The greatest gains in the past for butane and propane have been in homes cooking with kerosene, coal and wood.

The source of this information as regards the gas and electric figures comes from Paul Ryan, chief statistician of the American Gas Association, in his article in GAS Magazine, May, 1940. The U. S. Bureau of Mines supplied the figures for 1938 LPG domestic use, and the best available estimates for 1939 show that last year domestic use increased 46.2%

over that of 1938. Reports from range manufacturers selling 50% of all ranges sold in 1939 show ranges for LPG use increased 58.6%. The average of these two is 52.4%.

Official figures for 1939 compiled by the Bureau of Mines, will be made available soon. Until then, closely accurate comparisons are revealed in the table on this page.



"Liquified Petroleum Limited" Will Distribute LPG in Ontario

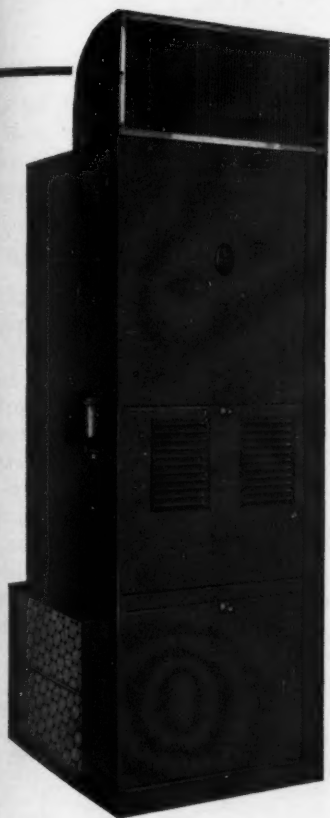
The Liquified Petroleum Limited has recently incorporated in Toronto, Ontario, Canada, and has established branch offices in many places throughout Ontario for the distribution of the products of the Shell Oil Co. of Canada, according to D. J. N. Light, secretary-treasurer of the Company.

The set-up of the new concern provides for the handling of tank car shipments of liquefied petroleum gas at local plants and the distribution of bottled gas to surrounding territories. Domestic, commercial and industrial installations have already been made, and gas appliances and equipment will be carried in stock.

GROWTH OF LPG INDUSTRY

Type of Fuel Used in Range	Used for Home Cooking		Gain Percentages	
	Total 1939	Gain over 1938	'39 over '38	'38 over '37
Gas	16,491,000	356,000	2.2%	1.2%
Electricity	2,510,000	235,000	10.3%	7.4%
Butane-Propane	750,000	250,000	52.4%	26.9%
(L.P.G.)				
Total.....	19,751,000			

BIG PROFITS IN A SMALL PACKAGE



Here's a complete Winter Air Conditioner, using L. P. G., that has a score of applications. Coming in four sizes, it fits the needs exactly of small homes, offices, stores, clubs and similar places. Compact in size, low in first cost, exceptionally economical to operate, it gives all the advantages of complete Winter Air Conditioning with L. P. G.

We suggest that you get the details about how you can make a double profit on this Bryant unit—first on the Air Conditioner itself—then on the L.P.G. supply.

THE BRYANT HEATER COMPANY

17825 St. Clair Avenue . Cleveland, O.



N. G. A. A. Elects New Officers And Presents Hanlon Award

GEORGE P. Bunn, Phillips Petroleum Co., Bartlesville, Okla., was reelected to the presidency of the Natural Gasoline



WILLIAM F. LOWE

Association of America at its nineteenth annual convention, held in Tulsa, Okla., May 15-17. J. R. Jarvis, Lone Star Gasoline Co., Dallas, Texas; Ray E. Miller, Hanlon-Buchanan, Inc., Tulsa, and J. W. Vaiden, Skelly Oil Co., Tulsa, were reelected vice presidents. William F. Lowe is secretary. The registration totaled 482. The convention program committee consisted of W. H. Harts, W. F. Fulton, J. R. Jarvis, G. W. McCullough, C. R. Williams, D. M. Wolfe and R. A. Worley.

Dr. George Granger Brown, professor at the University of Michigan, was awarded the E. I. Hanlon award for meritorious service the past year in the natural gasoline industry during the convention. George P. Bunn made the address which accompanied the award, consisting of a plaque and a gold watch. Dr. Brown has pur-

sued an intensive study of the properties of natural gas. This is the fourth year that the Hanlon award has been given to outstanding men in the industry.

Technical Committee's Work

C. R. Williams, Continental Oil Co., Ponca City, Okla., chairman of the technical committee of the N.G.A.A., stated in presenting his report that during the past year the committee had directed its attention primarily to the problem of deviation of gas under high pressure, to the study of low temperature fractional analysis methods and apparatus, by comparison of results from laboratories, and to specifications for liquefied petroleum gas and methods of testing.

The committee proposed and recommended to the board of directors tentative specifications for butane-propane mixture.

New officers for 1940-1941 of the Natural Gasoline Supply Men's Association are: W. W. Woobank, Woobank Pump & Machinery Co., president; L. S. Allen, National Tank Co., first vice president; George W. Probst, Clark Bros. Co., second vice president; D. A. Leach, Chicago Bridge & Iron Co., treasurer, all of Tulsa, Okla.

ROY E. HANSON

"Complete Line"

OF

BUTANE EQUIPMENT

Take advantage of the "complete line" that Roy E. Hanson has developed from 10 years of manufacturing experience in the butane field. A "complete line" will serve you better—cost you less.

- *Hanson Standard Butane Tanks*

We manufacture domestic, storage, skid, tractor, mobile and transport butane and propane tanks. Any tank for any purpose, expertly engineered and fabricated under A. P. I. - A. S. M. E. and A. S. M. E. codes.

- *Hanson Butane Dispensing and Metering Units*

An inexpensive, correctly engineered unit of great simplicity and dependability. It meets all service station requirements for above or underground storage.

- *Hanson Butane Fittings and Hoses*

Our hoses are built under the Hanson name to propane specifications. Any hose for any job provided from our local stock.

- *Hanson Redhead Butane Carburetors*

A complete unit (converter and mixer) built for tractors, trucks and stationary engines. For motors up to 150 H. P.—perfect idle—positive lock-off— instant starting—and more mileage.

A manufacturer of butane tanks for the past 10 years, Roy E. Hanson helped to develop the modern butane vessel that makes the utilization of butane practicable. Other butane equipment has been developed as the demand made manufacturing feasible and profitable. Today a "complete line" of Roy E. Hanson equipment offers standard, proven equipment to the L. P. G. industry.

- ★ Roy E. Hanson offers a complete line of Code tank heads in sizes 4½ in. to 60 in. diameter. Shipped any place in the United States.

Roy E. Hanson

Manufacturing Mechanical Engineer

1924 COMPTON AVE.

LOS ANGELES, CALIF.

The Economics of LPG as Applied To Natural Gasoline Manufacturers

THE market conditions now confronting the natural gasoline industry have brought home to the manufacturer the desirability of utilizing hitherto waste products as a means of bolstering the dwindling profits from sales of his major product.

In search for possible addition to his revenue, it is not surprising that first consideration be given the sales of liquefied petroleum gases. Propane and butanes are included in the unstabilized product of nearly every gasoline plant. The process may be so adjusted and controlled as to yield a minimum of these constituents, but if efficient recovery of the gasoline fractions is obtained, a surplus of butanes and/or propane will be present in the raw product.

A great deal has appeared in the literature of the industry regarding the potential uses of propane and butanes and the consistent rise of the industry that has resulted from its marketing. The increase in sales of this industry has been most remarkable since its conception, and its progress has apparently been little affected by economic depression.

Market Appears Attractive

Having propane and butanes as a by-product of the manufacture of natural gasoline and with good possibilities of greatly increasing the yield of these products, it is not surprising that

● **JAMES W. VAIDEN**, manager, Natural Gasoline-Natural Gas Division of the Skelly Oil Co., Tulsa, Okla., in a paper, "The Economics of Liquefied Petroleum Gases As Applied To Natural Gasoline Manufacturers," presented before the Nineteenth Annual Convention of the Natural Gasoline Association of America at Tulsa, Okla., May 15-17, 1940. The paper covers the problems of manufacture, the precautions which have safe-guarded the industry, the importance of new processes and improvements in plant equipment, and the significance of the advent of polymerization, but because of its length it is impossible to publish more than an abbreviated form. Among portions omitted are those devoted to the use of LPG in the domestic field, central gas plants, oil drilling, stationary engines, industrial and chemical plants and in refineries, all of which are more generally understood by the industry. —Editor.

the liquefied petroleum gas market appears attractive. This outlook has, in many cases, been fostered by articles appearing in trade journals from time to time which would indicate that profitable markets are afforded for all the propane and butanes the natural gasoline manufacturer and refiner can produce.

While such a condition may eventually prevail in the interest of conservation and higher plant efficiencies, as far as the immediate future is concerned a thorough study of the technical and economic problems sur-

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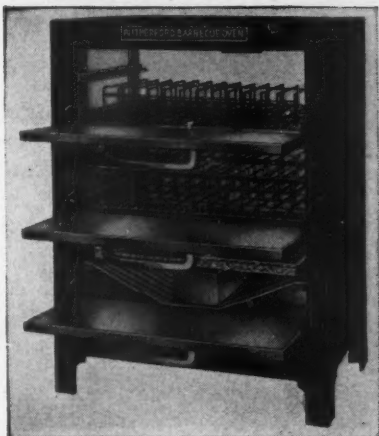
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It Pays to Make ECONOMY Installations

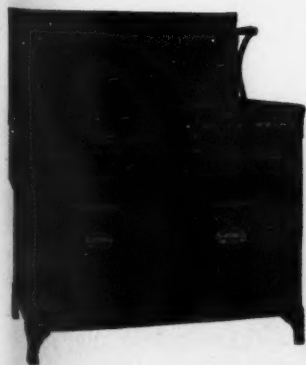
Every LPG installation is judged by the equipment the customer uses. The dependability of ECONOMY ranges makes them profitable for any cooking job.

ECONOMY for Barbecues →

Rutherford Barbecue Oven, pictured here, saves meat shrinkage by patented cooking process. A profit-builder for you, and your customers. Send for catalog and prices.



because they GIVE service instead of REQUIRING it!



Do your installations work FOR you—or against you? The dependable performance of each ECONOMY installation paves the way for more sales.

← ECONOMY for Cafes

The ECONOMY Restaurant Range, pictured here, is long-lasting, quick-working. Special burner construction saves fuel. Before ordering another range, get latest ECONOMY catalog. Send coupon below.

Comstock-Castle Stove Co., Quincy, Illinois.

Send your 1940 catalog on

- ☐ Household Ranges
- ☐ Commercial Ranges

Name _____

Address _____

SEND FOR 1940 CATALOG

rounding the manufacture and utilization of liquefied petroleum gases offers little encouragement to the average natural gasoline manufacturer.

In spite of the rapid growth of the liquefied gas industry, those respon-



J. W. VAIDEN

sible for its progress have proceeded cautiously in every phase of development. The result of such practice has effectively led the industry, along safe and fundamentally sound lines, which is responsible in no small measure for the continued expansion of the business. The fact that leadership in the industry has been aptly placed with a few large companies contributed greatly to the results achieved. The vast amount of research and experimentation that has been done, and the large capital investments found necessary were only possible by reason of the unswerving belief of those organizations in the future of the industry, and their ability to await long delayed returns on investment.

Not Interested at First

For a long time many of those engaged in the production of natural gasoline or refining of crude oil were not greatly interested in the liquefied petroleum gas industry. In spite of the constant increase in sales of the products, the volume represented failed to greatly impress those used to thinking in much larger quantities.

The seemingly endless problems connected with any phase of the liquefied gas business did not help matters and the industry was allowed to progress without much attention from those not already engaged in the business. This situation continued until profits from the sale of natural gasoline dwindled almost, if not quite, to the vanishing point, when increased attention was directed towards the possibility of profits from propane and butanes.

At first thought, the economics of the sales of excess propane and/or butanes appear attractive. The distribution of these products has been well worked out in some areas, and published statistics seem to show a market far from saturated.

Must Study Both Sides

The advent of polymerization and related processes in the oil industry within the last few years seems to add great possibilities of the profitable disposal of hitherto waste products, and even the recovery and sales of additional quantities of these gases. However, a thorough study of the technical and economic problems surrounding the manufacture and distribution of liquefied petroleum gases will reveal many facts that may considerably alter the outlook as far as the average gasoline manufacturer is concerned.

There is little question regarding the value of new production processes, improvements in plant equipment or market opportunities constantly developing, but due consideration should be given by those interested to the problems in engineering and economics that surround their application

Cut fuel costs with **CALOL**

Reg. U. S. Pat. Off.

INDUSTRIAL GAS No. 2 (Commercial Propane)

AS an industrial fuel, Calol Industrial Gas No. 2 offers you many money-saving advantages. Characterized by an extremely high degree of purity, this product may be used in many types of furnaces and burners. It permits lower investment in burners, air-gas mixers, piping (no air piping or blowers required), and in temperature-control valves.

Available for immediate delivery in 91-lb. and 41-lb. steel cylinders and tank car or tank truck. Call our nearest office. Technical and engineering service will gladly be supplied on request.

STANDARD

Liquefied Petroleum Gases

STANDARD OIL COMPANY OF CALIFORNIA

to any one situation. For example, let us consider an average natural gasoline plant.

Such a plant would be equipped and operated for the production of 26 pound natural gasoline containing about 30% butanes. Before fractionation, the raw plant product probably contains some propane and an excess of butanes over that necessary to make the 26 pound product. The actual recovery of butanes from the gas will be somewhat greater than 50% of the total butanes contained in the gas. This figure will vary widely, depending upon the percentage of butanes with reference to other components in the gas. The propane and the butanes recovered in excess of that used in the gasoline represent a by-product of the normal manufacture of natural gasoline. Disposition of these by-products at any price is profitable provided that no further processing is necessary and the cost of production of the gasoline is reduced an amount equal to revenue from this source.

Costs Must Be Considered

If the disposal of these by-products requires additional processing, as will, with few exceptions, be the case, consideration should be given the cost of such processing, both in operating costs and such additional capital investment as may be necessary for equipment, in determining the actual cost of production of the finished product. The same thing is true if it is desired to increase the recovery of propane or butane over that necessary for efficient gasoline manufacture. In other words, the recovery of any product other than natural gaso-

line requiring additional capital investment or operating costs in existing plant, places such a product in the class of a special product unrelated to natural gasoline. Such additional costs as may be incurred in its manufacture must be charged against its production before the actual cost can be determined by the manufacturer. If this is done, it will be found that the manufacture of liquefied petroleum gases is far from the bonanza that many would like to believe.

Problems of Manufacture

Let us briefly consider some of the problems of manufacture. The butanes and lighter fraction separated by fractional distillation from the natural gasoline will probably consist of iso and normal butane, propane, ethane and maybe a trace of methane. In addition, there may be hydrogen sulfide present in more or less amounts, and there will also be water vapor. Such a mixture is not suitable for sale as liquefied petroleum gas for any recognized use. About its only value might be as fuel gas along with the methane and ethane passing through the plant absorbers. Before this mixture could be marketed as liquefied petroleum gas in even its crudest form, the hydrogen sulfide and water vapor must be removed with any methane that might be in the mixture and all but a very small amount of ethane. This processing would require a chemical treating plant for removal of the hydrogen sulfide, a fractionating column and accessory equipment for removal of the methane, ethane and water vapor and, of course, the necessary storage tanks.

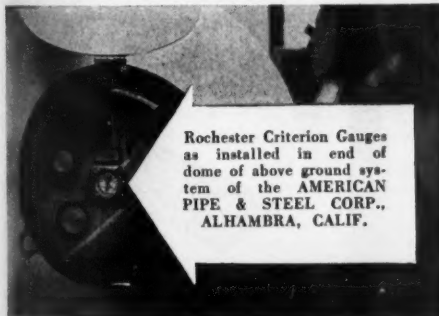
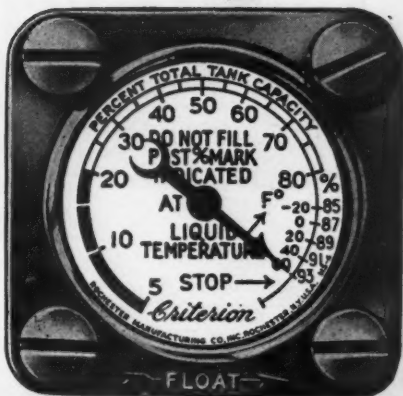
HERE'S THE GAUGE THAT BRINGS A NEW MEASURE OF EFFICIENCY TO L.P.G. SYSTEMS!

Rochester Criterion Gauges are SPECIFICALLY designed for use in liquefied petroleum fuels and incorporate the famous Rochester magnetic principle of operation which assures greater accuracy and positive leak-proof construction. Listed as Standard by Underwriters' Laboratories. Distributed by manufacturers of L.P.G. Systems.

MANUFACTURERS!
SPECIFY Criterion Gauges
On Your L.P.G. Systems

ROCHESTER MFG. CO., INC.

17 Rockwood St., Rochester, N. Y.

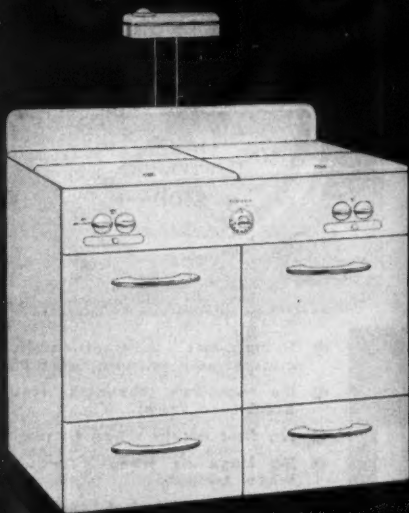


Rochester Criterion Gauges as installed in end of dome of above ground system of the AMERICAN PIPE & STEEL CORP., ALHAMBRA, CALIF.

- Permanent magnet pointer control—no packing glands.
- No opening through Gauge head into tank.
- No fuel waste when in use.
- No keys or wrench required when reading.
- Easy-to-read dial tells ACCURATELY at-a-glance the amount of fuel in the tank in terms of percentage of total capacity.
- Red area on left side of scale warns user when fuel needs replenishing.

ROCHESTER *Criterion* GAUGES

A BIG NAME IS A BIG HELP IN THE BIG LPG MARKET



FLORENCE *Gas Ranges*

FLORENCE gives you a head start in LPG sales. Years of strong national advertising have made the name "Florence" familiar. Your prospective users know it and trust it!

Florence Butane-Propane ranges are packed with sales-making features that promise your customers the utmost in convenient, dependable cooking. They are beautiful—smart, modern, streamlined. These are *built-in* qualities—the result of more than 65 years' experience.

Let Florence quality do double duty for you—in first sales, and in the all-important job of keeping your customers satisfied. Mail the coupon today to the Florence Office nearest you.

FLORENCE STOVE COMPANY

General Offices and Plant, Gardner, Mass.; Western Offices and Plant, Kankakee, Ill.; Sales Offices: 1458 Merchandise Mart, Chicago; 45 E. 17th Street, New York; 53 Alabama Street, S.W., Atlanta; 301 N. Market Street, Dallas; and 2730 16th Street, San Francisco.



FLORENCE STOVE COMPANY

Please send me the Florence Gas Range Catalog, prices, and full information about the liberal Florence Promotion Plan for Dealers.

Name

Address

BUTANE-PROPANE News

pumps, etc., for handling. This equipment will incur additional operating expense in the form of steam for the fractionator, power for pumps for feed and reflux to the column and treater, attendance and maintenance. If the volume of the light fractions available for such processing is small, as it usually is in the average gasoline plant, the cost per gallon of finished product is high and the sales value of the propane-butane mixture resulting is limited.

If the recovery of butane and/or propane is increased to its practical limit we would probably have to make radical changes and/or additions to the gasoline plant.

Outlay for Plant Changes

Reliable cost data show that 95% butane recovery will require an additional investment of \$4 per gallon of gasoline recovered in areas having gas very rich in butanes, such as East Texas, and that this figure will be increased to around \$15 per gallon of gasoline in most other areas. This is for plant changes only and does not include additional costs in gathering system. Generally speaking, it will be found that the extraction of propane and butanes beyond the limit obtained incidental to efficient recovery of natural gasoline, is likely to prove uneconomical, a fact that has not been given sufficient weight when estimating the possibilities of such manufacture. Let us consider the major markets for liquefied petroleum gases as they appear in several instances.

The use of butanes and/or propane as a fuel for internal combustion engines has been developed to a consid-

erable extent in the Pacific Coast area. This use started with farm machinery, such as tractors, pumps and trucks, and its use has now spread to commercial vehicles, such as trucks and busses operating over definite routes where suitable provision would be made for fuel supply. Contractors on large engineering projects have also afforded a good market for this fuel.

A more widespread use of the liquefied gases as engine fuel has been delayed due to the lack of particular interest in this development by the average oil company producing natural gasoline. These companies have been restrained by fear that the marketing of substantial amounts of liquefied gases as engine fuel would seriously encroach upon their markets for motor fuel and/or fuel oil. The actual situation, however, does not justify such an attitude as the possible volume of sales of liquefied gases for this purpose, as compared with conventional fuels, will necessarily be small. This is true because of the economic impracticability of providing a widespread distribution system, such as filling stations, for the small percentage of vehicles that would find propane or butanes a particularly desirable fuel.

Polymerization and Related Processes

The commercial development of polymerization, alkylation and related processes has opened a new market for liquefied petroleum gases. A great deal of publicity has been given these new manufacturing methods and their relation to the refining and natural gasoline industry.

The natural gasoline industry has been trying to read profits between

the lines of such published material as has appeared in trade journals regarding these processes, but so far as the average natural gasoline manufacturer is concerned, his opportunities for realizing much profit are rare.

It has been estimated that about 9,000,000,000 gals. of gasoline could be produced yearly by the polymerization of hydrocarbon gases available in the United States, of which more than 1,000,000,000 gals. would be iso-octane fuels of 95-100 octane number.

Again it has been shown that 3,275,000,000 gals. of aviation gasoline averaging 92 octane number, could be produced by dehydrogenation, polymerization and hydrogenation, and 3,005,000,000 gals. of gasoline of an octane number between 93 and 95 from thermal and sulfuric acid alkylation.

Estimates Are National Maximums

These estimates are based upon processing the total hydrocarbon gases of suitable composition that can be produced in the entire United States and, while the figures are impressive and astonishing to the layman, they offer no constructive information to anyone seriously contemplating the possibilities afforded by such processes. As far as the average natural gasoline manufacturer is concerned with polymerization or alkylation in the present state of development, he has little if anything to gain from these processes.

In the present state of the art, the application of polymerization to the utilization of excess butane does not seem economically possible at any but a few natural gasoline plants. The relatively high investment and operating costs for the smaller units now

available preclude their use under existing market conditions, and the concentration of sufficient butanes to support a large unit is out of the question for all but a few large companies.

Alkylation of iso-paraffins for the production of high-octane aviation gasoline offers little opportunity for application by the average natural gasoline manufacturer. The cost of the plant is very high and the market for aviation gasoline 100 or more octane number, for which this process seems especially suitable, is as yet rather limited under existing conditions.

Summary

While the major uses of liquefied gases have been considered, there are some which would properly come under other classifications. These products have a wide range of possible utilization and new and possibly important uses will be developed. Thus there is a good chance that the overall picture may change as time goes on, and the relative importance of the various uses may greatly affect their position in the industry.

At the present time, however, we may summarize the situation as regards the natural gasoline manufacturer as follows:

1. Profitable manufacture and sales of propane and/or butane as liquefied gases are dependent upon a stable market offering a reasonable profit.
2. Stable markets can only be established by organizations having ample capital and sound merchandising policies.
3. A well grounded knowledge of the properties and limitations of the products and their utilization is a requisite for success of the manufac-

MOYNO L.P.G. PUMPS

Check Vapor Lock and Cavitation



THE Moyno L.P.G. Pump handles butane, propane, and other highly volatile liquids . . . gently . . . evenly. It helps eliminate the costly troubles of vapor lock and cavitation.

The specially designed mechanism of the L.P.G. Moyno Pump is simple, efficient, safe, and economical. Liquids are gently pushed ahead by an eccentric rotor revolving within a helical stator. Pressure is constant, and liquid velocities within the pump are not over 22 to 23 feet per second. Action is the same as that of a piston moving through an endless cylinder. Result—minimum turbulence . . . uniform flow.



Single-stage Moyno L.P.G. unit for differential pressures not exceeding 75 P.S.I. Ideal for bulk stations.



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Solve your butane and propane problems by installing Moyno L.P.G. Pumps. The coupon below will bring you detailed, descriptive booklet. Mail it today.

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L. P. G. Pumps. I handle Butane ☐

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JUNE - 1940

turer or distributor wherever located.

4. Those who entered the field at an early date are well established in the areas of greatest consumption for the liquefied gases and further extension of territory will probably yield lower profits than have been experienced in the past.

5. Present sales of propane are characterized by increased capital investment for the distributor and long-term profits.

6. Increased competition within the industry and with other fuels will probably result in lower profits and greater need for capital by the distributors of liquefied gases for domestic fuels.

7. The use of butanes for various purposes is increasing, but, as yet, lacks proper coordination of manufacturer and marketer to form a very stable part of the liquefied petroleum gas industry.

8. The potential market for butanes and possibly propane as domestic fuel, central gas plants, and as fuel for internal combustion engines offers possibilities in some areas and is worthy of greater consideration by the industry.

9. The full value of butanes as a motor fuel has not been recognized by the automotive industry in their design of fuel systems to accommodate more volatile fuels.

10. The installation of polymerization or alkylation plants at any but a very few natural gasoline plants is at present not feasible from an economic standpoint.

11. Except where pipeline facilities are available the natural gasoline plant will probably find it uneconomical to

supply butanes and/or propane as a feed for conversion plants at any distance from the source of production.

12. The recovery of propane and/or butanes in larger quantities than necessary for the efficient recovery of natural gasoline requires larger capital investment in plant and results in increased operating expenses which will usually prove uneconomical under present-day conditions.

13. The manufacture of liquefied petroleum gases by the refiner offers considerable competition to the natural gasoline industry in some locations.

14. The question of profit or loss in the manufacture or sales of liquefied petroleum gas is dependent upon a most critical and detailed analysis of every angle of the business and the ability to withstand relatively large capital investment for participation in long-term low profits.

In conclusion, the writer wishes to acknowledge reference to published data, and the use of a portion of such data in this discussion. Acknowledgment is also made of the assistance of Frank E. Fisher in the preparation of this paper.



Carl Smith Will Sell For R. J. Allison Co.

R. J. Allison Company, Tulsa, Oklahoma, has appointed Carl Smith as a special contact representative in their butane industry.

Mr. Smith has been associated with the company for 15 months, during which time he has worked in all phases of the butane program of this organization. His experience includes laboratory experience in refineries, and sales work in connection with butane for drilling purposes. In this new capacity, Mr. Smith will actively travel the Mid-Continent area. He is a graduate of Texas A. & M. college.

From Hundreds of Letters in HYDRO-GAS SYSTEM Files



MRS. W. H. NEWMAN, Van Tassell, Wyoming, writes:

"We have had our Hydro-Gas System for about a year and a half and just haven't gotten over the excitement of anything so wonderful for country folks yet. If I had always lived where one had modern conveniences, those things would be commonplace, but when one has lived on a Wyoming homestead for twenty-five years, forty miles from town, burned cow-chips for fuel except in cold weather, the Hydro-Gas System just seems too good to be true. We have come through two very severe winter months. Our fuel bill is less than when we burned coal."



HORACE BELL of Peoria, Arizona, makes this statement:

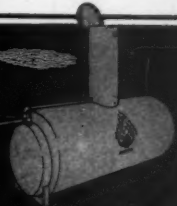
"... a few facts and figures on what a Hydro-Gas System has meant in the way of comfort and convenience to a rural family of four persons. We operate an eleven-foot Electrolux refrigerator, an automatic water heater of thirty-gallon capacity, a Chambers range, a 30,000 B.T.U. circulating heater. That is what a Hydro-Gas System can provide in creature comforts—and this at a cost of only \$4.00 per month. Another thing I like about a Hydro-Gas System, it is buried in the ground out of sight, out of the way. We wouldn't be without a Hydro-Gas System for three times its actual cost."



MRS. PAUL PUTTHOFF, Blue Springs, Missouri, says:

"We live at Lake Tapawingo, twenty miles from Kansas City. We bought a Hydro-Gas System, a Magic Chef stove, a Ruud water heater, and the Brilliant Fire heater that blows warm air evenly all through the house. I can't find words to tell you how thrilled and pleased we are with our equipment. This is the coldest winter we have had in forty years. But with our new Hydro-Gas equipment all the rooms were the same temperature. My curtains that I put up last fall are as nice and clean as they were then. Our walls are California plaster and have had to be painted each year but not this year. It is so nice and clean that even our laundry has been cut in half. We really feel that this plan will pay for itself. Cooking has really become a pleasure where it used to be drudgery."

The patented Vaporizer and Re-Vaporizer have made Hydro Gas Systems the accepted choice of thousands. Each system is built in accordance with rigid specifications of A.S.M.E.—is inspected by Hartford Steam Boiler and Inspection Co.—carries the Underwriters' Laboratories acceptance—and consumer interest is being created with aggressive advertising. Correspondence is welcomed from responsible prospective contributors and dealers in territories not now under franchise.



SOUTHERN STEEL COMPANY, SAN ANTONIO, TEXAS

Turn now to ANCHORGAS—

Write, Wire or Phone
for Quotations!

- ★ Your requirements of BUTANE and PROPANE available at all times from any of our many shipping points.
- ★ No order too large or too small
- ★ Tank cars or tank trucks ready to serve you on instant notice.
- ★ ANCHORGAS—a good high grade product to help you make more satisfied customers.
- ★ ANCHORGAS—for domestic and industrial purposes at your service.

ANCHOR
PETROLEUM COMPANY

Atlas Life Bldg., Tulsa, Okla.

Warren Petroleum Corp. Extends Personnel and Butane Storage

As part of an expansion program that includes additions to both personnel and equipment, the Warren Petroleum Corp., of Tulsa, Okla., is contemplating in the near future the erection of 15,000 barrels of storage space, which is the equivalent of 600,000 gallons or 60 tank cars, for the states of Mississippi and Louisiana. The Magnolia, Ark., plant already has facilities for handling 100,000 gals. of storage.

An increase of 24,000 gals. in each of the storage facilities at Galva, Kan., Maud, Okla., Monument, N. M., and Fairbanks, Texas, plants has recently been installed as a part of this program, which brings the total available butane storage to approximately 1,500,000 gals. (Photo of Galva bottle filling plant on this page.)

The butane division is now under the supervision of Fred J. LaFortune and P. J. Hoagland, and Kenneth T. White has become new field representative, with headquarters at the Shell Oil Co.'s plant at Magnolia, Ark., whose entire output of gasoline and butane is handled by the Warren Petroleum Corp.



C. B. Temple and H. K. Conklin Join Anderson Stove Co.

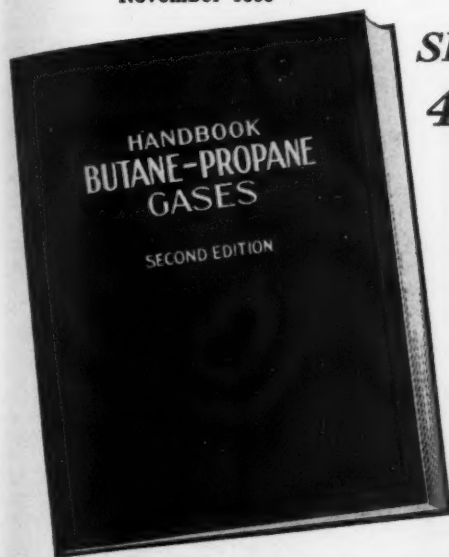
A. A. Brady, president of the Anderson Stove Co., Inc., Anderson, Ind., has announced the appointment of two new representatives in the Middle-West sales division. C. B. Temple will represent the Anderson firm in Chicago, Northern Illinois and Northern Indiana. H. K. Conklin will cover Kentucky, West Virginia and Southern Ohio. Both representatives were formerly with American Gas Service.

Mr. Temple and Mr. Conklin will cover thoroughly the bottled gas areas of their territories as well as the natural and manufactured gas markets.

A new sales promotion program to be released shortly is also announced by officials of The Anderson Stove Co. Present plans call for continued emphasis on the "sealed heat" features of Anderson gas ranges and on the savings effected by the range in food, flavor, fuel and labor.

Handbook BUTANE-PROPANE GASES

Latest Revision
November 1938



SECOND EDITION
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CONTENTS: Semi-Bulk Distribution: Use of Butane in Buses: Combination Propane Operated Utility Plant: Use in Internal Combustion Engines: Design & Installation of Storage: Supply from Petroleum Refineries: Engineering Data on the Lower Olefins: Domestic Appliance Testing and Utilization: Economical Comparisons with Coal, Oil, Electricity, Producer Gas, Manufactured Gas: Town Plants: Manufacture from Natural Gas: Special Uses: Volume Correction Factors: Trans-

portation: Use with Other Gases: Analysis & Testing: Properties of Mixtures: Bottled Gas Distribution: Bibliography: Central Plant Directory: Catalog Section.

We pay the postage on orders accompanied by remittance.

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News

1709 West 8th Street, Los Angeles, Calif.

PRODUCTS

Florence Range

Florence Stove Co., Gardner, Mass.

Model: No. 3231. Approved by A.G.A. for LPG service.

Description: This is one of the new ranges in the Series 1000-2000-3000 recently announced, with widths of 20 in., 30 in., and 36 in., respectively. All are in full white porcelain finish, with four



standard size non-clogging, ring-type burners and automatic lighters. On each, the left rear burner is furnished with a high-low-simmer valve. Ovens are equipped with newest Robertshaw combination gas cock and thermostat. Ovens of extra large capacity, fully insulated and porcelain lined, as also are the drawer-type broilers. All models except the 1000-Series have handy utensil compartment.



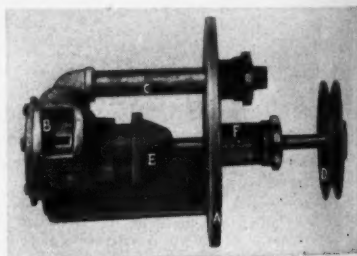
Submerged Pumping Unit

Warner Lewis Co., Tulsa, Okla.

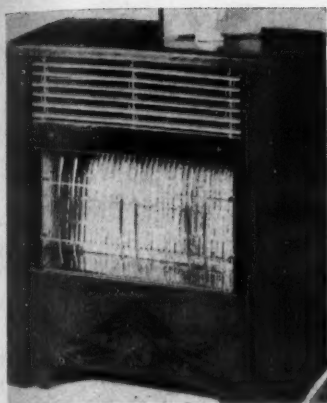
Model: The Lew-Nel Submerged Pumping Unit.

Description: A submerged pumping unit

for installation inside pressure or vacuum vessels or in small auxiliary receiving tanks attached to storage tank or working chamber. The features claimed by manufacturers are: (1) unit reduces initial cost and many replacement costs because it simplifies installation and reduces floor space usually required. Outside space required is to right of "a," with small motor and belt attached to pulley "d"; (2) reduces stuffing box "f" problem because packing is against suction pressure only and not against discharge pressure; (3) all classes of material from liquid gases to heaviest stocks including propane and butane, handled by unit; (4) increases pump efficiency because of patented construction allowing pump to be fully submerged. Thus large flooded suction opening ("b" in illustration) permits high volumetric efficiency when pumping viscous materials; (5) eliminates vapor lock because the entire pump (to the left of the flange marked "a") is submerged beneath liquid; (6) minimizes leakage hazard because a static condition practically exists between inside and outside packing pressures. The small discharge pressure back slippage leaks back into the source of supply (at "e") and not into the atmosphere; (7) eliminates elevating vacuum flash towers because flooded pump suction can be obtained without such. In many instances



this makes a saving in a major investment; (8) non-corrosive because, being submerged, no atmosphere can reach the pump. Each unit is designed and engineered for each particular installation, rotary centrifugal, or turbine pumps.



Gas Heater

Dearborn Stove Co., 3256 Milwaukee Ave., Chicago.

Model: 13-K.

Description: This heating unit consists of a burner with a large mixer, long injector tube and gas divider baffles, plus four rows of high ports arranged for good secondary aeration, with an elongated, high velocity spud with lathe drilled orifice, microscopically inspected for butane gas. The 1940 line features 11 models including three clay back radiants. The cabinet models come either vented or unvented, in radiant or circulator types, and with a choice of three finishes. Due to a patented interior construction and forced air circulation, the cabinets never become hot, making it possible to use fine finishes.

Catalog: A descriptive folder and price list may be obtained from the company.



Cooling Tower

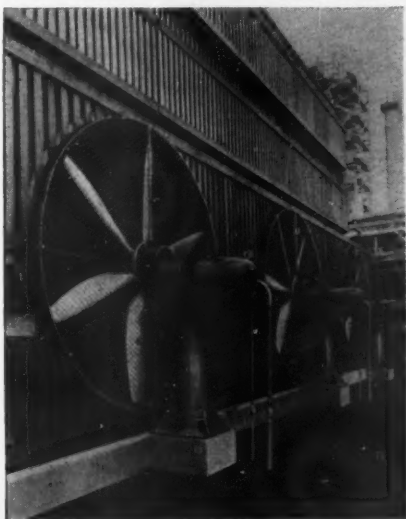
The Fluor Corp., Ltd., 909 E. 59th St., Los Angeles, Calif.

Model: Fluor Forced Draft Cooling Tower.

Description: Streamline design and scientifically engineered operating mechanism are embodied in the new Fluor Forced Draft Cooling Tower. Ten-foot alumi-

num alloy fans with adjustable pitch are utilized. Fans are pedestal-mounted and motor-driven through special gear reduction units. The exterior walls of the tower are of the new aerator type outer shell construction which provides ventilation for outside walls, preventing rot and eliminating unsightly, water-stained appearance. The complete tower is constructed of pre-fabricated California redwood, secured with brass bolts and hardware. Where space is not available for the installation of a Fluor Atmospheric Aerator Type Cooling Tower, the Forced Draft units offer high cooling efficiency under comparable conditions. The overall size of the tower is 48 ft. long, 40 ft. deep and 28 ft. high. This unit has six cells, each measuring 20 ft. by 15 ft., and is rated to cool 5000 gals. of water per minute.

Catalog: A new bulletin has recently been issued on Fluor's complete line of mechanical cooling towers, including forced



and induced draft towers, spray ponds, spray coolers and indoor cooling units. Copies may be obtained by writing The Fluor Corp., Ltd., 909 East 59th St., Los Angeles, Calif.

QUALITY PRODUCT

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Philgas believes that there is no substitute for a full measure of quality in every gallon of product it produces or sells.

Philgas products are sold on what are probably the most complete and most rigid quality specifications in the liquefied gas industry. YOU can benefit by buying assured quality from Philgas.

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**THE NATION'S LARGEST MARKETER
OF LIQUEFIED PETROLEUM GASES**

Contest Now Open to Bottled Gas Men

THE annual Spring and early Summer gas refrigeration selling drive conducted by the American Gas Association refrigeration committee has been extended in scope to include the liquefied petroleum gas manufacturers, according to an announcement received from the committee through its chairman, Bernard T. Franck, vice president of the Milwaukee Gas Light Co. Co-incident with this extension of the drive into the "bottled gas" field, the refrigeration committee has also been enlarged by the addition to its membership of Frank B. Boice, sales manager, Shellane Division, Shell Oil Co., Inc., St. Louis, and B. D. Geroy, general manager, Illinois Bottled Gas Co., Chicago. This part of the drive will be known as the "Beyond the Gas Mains" division.

Cash awards are offered to liquefied petroleum gas companies which have the highest records in Servel Electrolux refrigerator selling during April, May, and June, the prizes to be awarded in the following manner:

For the company which has 15,001 or more domestic installations, which installs the greatest number of refrigerators per 1000 customers during the campaign, \$200 will be awarded.

The company in the 15,001 or over classification which installs the greatest number of installations in the same period will be given \$200.

An award of \$100 will go to the company in the same classification

which shows the greatest increase in Servel Electrolux installations in the 1940 period as compared with April, May and June a year ago.

Companies having 15,000 installations or less compete for awards on the same basis as the larger companies, the amounts of awards offered being \$100 each for companies making the greatest number of installations per 1000 customers, and the greatest number of total installations respectively, and \$50 for the company showing the greatest increase in installations over those of the same period last year.

Detailed information regarding the campaign will be furnished by John W. West, Jr., secretary of the A. G. A. refrigeration committee, Graybar Building, New York City.

"The 1940 A. G. A. refrigeration committee recognizes the increasingly greater part which the liquefied petroleum companies are playing in promoting greater acceptance for gas refrigeration. We are, therefore, pleased to announce that definite steps have been taken this year to express our appreciation," Mr. Franck stated.

"The 1940 refrigeration campaign, launched under the theme "Pioneers of Progress," symbolizes the opportunity which exists for men with the foresight and will of true pioneers. Today the gas industry stands on the threshold of new opportunity and new achievement—opening the pathway to new honors and attainments for gas refrigeration and the gas industry. These annual gas refrigeration drives have accomplished much for the gas utility industry and it is our belief that they can be similarly helpful to your company."

OUT IN FRONT

IN
STYLE, BEAUTY
CONVENIENCE
SALEABILITY



SELL ROUND OAK RANGES

Line up with Round Oak and you'll have a beautiful, complete line that is always easy to sell... twelve outstanding ranges designed to meet every need, priced to fit every budget, *factory built* and tested for any bottled gas specified... a famous, profitable line that's always out in front. Get all the facts today. Use coupon below.



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**BUILT FOR
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**SMITH BALANCED ROTARY PUMPS
HAVE RECEIVED IMMEDIATE AC-
CEPTANCE BECAUSE THEY PUMP**

**NON-LUBRICANT FLUIDS
TO HIGH PRESSURES
WITHOUT WEAR
WITHOUT LEAKS**

This radically different pump develops the high pressures required for fast deliveries and bottle filling. Capacities to 135 GPM. Differential pressures to 200 lbs. Built for 250 lb. working pressure.

FOR ALL SERVICES

Bulk plants, dispensing, bottle filling, tank trucks, refineries, pipe lines, etc.

Write for complete bulletin.

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SOUTH PASADENA, CALIFORNIA**

SMITH
Precision Products
COMPANY

Woodsman Buys Utility for \$1

A GAS company for one dollar looked like a bargain to Harold E. Greenwood, former United States forestry worker of Gardner, Mass., and so, about two months ago, with the approval of the Securities and Exchange Commission, he purchased the Gardner Gas, Fuel and Light Co. SEC officials stated they did not believe there had ever been a cheaper sale of a "going" gas company.

At the time of the sale there were about 600 customers to whom the company delivered manufactured gas from the plant through its 25 miles of gas mains. Immediately after taking possession of the company, Mr. Greenwood announced that Pyrofax bottled gas would be made available to homes beyond the gas mains. Much interest was shown in the new gas, and brought Mr. Greenwood several of his new customers. It is his plan to build up his service to at least 2500 customers, which was the size of the business in 1915.

The estimated maximum liquidation value of the company is \$15,281 and the net book value of capital assets amounts to \$358,895. Under the terms of the sale to Mr. Greenwood, the former owners, The New England Power Association and its subsidiary, Massachusetts Utility Associates, cancelled the gas company's entire indebtedness of \$388,427.

In one of his first public statements, Mr. Greenwood said that his new

company had "a bright future," but that he would have to start at the bottom and learn the new bottled gas business. To that end he, personally, has started reading meters and selling ranges, heaters and refrigerators. Besides himself, the force consists of four men and two office girls. His board of directors, in addition to himself, consists of his wife, Albert H. Stone and Calvin S. Greenwood.

Emco Introduces New Pressure Regulator

Regulators developed in the past for gas pressure control have been largely designed to meet some specialized installation. Examples of these are appliance regulators for use in controlling the pressures on gas burning appliances and service regulators for reducing high distribution pressures to lower, safe house line pressure.

There is an increasingly large field of control problems not met by this type of specialized equipment. To meet these needs, the Pittsburgh Equitable Meter Co. has rounded out its line of control equipment with the EMCO "1001" Regulator. Through the use of this regulator, it is now possible to control pressure with a high degree of accuracy for any outlet setting of from 2 oz. up to 20 lbs., having rates of flow well in excess of the capacities normally transmitted through 2-in. piping.

This regulator is designed to provide accurate control for installations having both small and large flow rates, where supply pressures ranging up to 150 lbs. must be reduced to 20 lbs. or less. In this category are large gas appliances, boiler plants and industrial heat treating furnaces. It is also well suited to small town border station requirements and may also be employed for district regulator installations where systems are operated at intermediate pressures or at intermediate and low pressure combined.

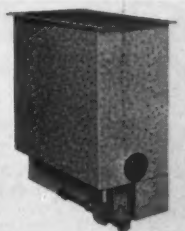
Bulletin No. 1059, describing this regulator, will be sent to those wishing it.

BULL'S EYE ●

You Can't Miss a Sale If You Display and Deliver from Pacific's 'FLOOR STOCK' of

300

PIPELESS FURNACES

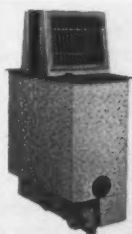


AND you can easily carry this stock, by reason of Pacific's new selling set-up. It's sweeping the field!

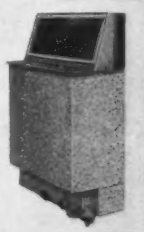
10 FURNACES

10 CONTROL Assemblies
3 BURNER Assemblies

(ready to connect in less than 10 minutes!)



YOU'LL have 100% latitude in fitting the furnace to the job, and can make immediate delivery. And with Pacific's scientific design, highest possible efficiency rating and amazing fuel economy, sales are sure! Write today for catalog. Dept. BN-6.



PACIFIC GAS RADIATOR COMPANY

Main Office and Factory
Huntington Park, California



RESEARCH

- **BUTANE-PROPANE News** wishes to keep its readers informed regarding technical and practical advances concerning research, manufacture, development, and transportation in the liquefied petroleum gas field. In this column will be found a resume of recently published articles, papers, bulletins and books dealing with the industry's various phases.

Hydrogen Sulfide Detector—F. B. Behrens. *Oil and Gas Journal*, Mar. 28, 1940, p. 86. With the erection of the nonselective polymer unit at the refinery of the Wilshire Oil Co., Norwalk, Calif., it was necessary to scrub the vapors free of hydrogen sulfide before processing in the polymer plant. In the interest of economy it was mandatory that the scrubbing method be a regenerative process which entailed the handling of hydrogen sulfide in a comparatively pure state—an extremely hazardous procedure. Usual safety precautions were the use of various detecting devices or enclosure of the plant proper in a "sealed can." Since most of these methods were quite costly, the Wilshire Oil Co. collaborated with D. O. Bushnell, Los Angeles engineer, and the result was the compact and efficient detector described and illustrated in this article.

Motor Cars, Tanks and Aircraft to Have Better Fuels in 1950—*National Petroleum News*, Mar. 20, 1940, pp. R-82-84, 86. Need for improved fuel knocking characteristics will be dependent upon future changes in engine design. Design changes will be relatively slow because of rate of car replacement in service and the logical rate of change of engine design should tend to become slower. Relatively small changes are expected in other motor

fuel properties as compared with aviation fuels which are used in engines now having up to double the mean effective pressures of motor car engines. Vapor lock difficulties at high altitude and volatility specifications are being studied now and may have some effect on the fuel of the future. Increasing use of specific hydrocarbons of low knocking tendency may constitute beginning of a trend toward use of pure compounds or simple mixtures. Inadequacy of Diesel fuel tests shows need for new test methods.

Piston Rings—Lubrication, Feb., 1940, pp. 13-24. The functions of piston rings are to: 1. Maintain compression; 2. Control lubrication; 3. Conduct heat away from the combustion, power or working chamber to the cylinder walls as well as the piston where the cooling system becomes effective. This article describes and illustrates various types of piston rings, as well as giving information pertaining to their selection, installation, maintenance, and other factors.

Preparation and Structure of High Molecular Weight Polybutenes—R. M. Thomas, R. J. Sparks, and Per K. Frolich. *Journal American Chemical Society*, Feb. 1940, pp. 276-280. The catalytic polymerization of isobutene at low temperatures to form a homologous series of polymers ranging to very high molecular weights is discussed in detail. The structure of the polymers is partially established.

"Buna," A New Synthetic Rubber from Petroleum—*Lamp*, Feb., 1940, pp. 4-6. News stories reporting Standard Oil Co. of New Jersey's ownership of American rights to the Buna synthetic rubber developed by the I. G. Farbenindustrie of Germany naturally have led to considerable speculation about the new product. Is Buna as good as natural rubber? Will it replace the natural product? Can it be supplied as cheaply and in sufficient volume? Who will produce it? What connection is there between synthetic rubber and the oil business? These are some of the questions answered in this article.

Causes, Prevention and Control of Fires on Light Liquid Hydrocarbons—

H. A. Heiss. *Oil and Gas Journal*, Mar. 28, 1940, pp. 135, etc. Although this experimental work was carried out on equipment too small to permit the direct application of the results to storage conditions (with the exception of the tests on water fog) several general conclusions were drawn, namely: 1. Fires on open tanks containing light liquid hydrocarbons can probably be extinguished with reasonable quantities of foam applied at reasonable rates provided the Reid vapor pressure of the stock burning was not higher than 36 to 38 lbs. 2. Steam would not be effective in extinguishing an open-tank fire. 3. Although carbon dioxide might be effective on an open-tank fire the amount required would be too great to be practicable. 4. Fire foam applied in limited quantities to the liquid surface would not extinguish a fire burning at a vent or at a rupture of the tank roof. 5. Carbon dioxide applied, with fire foam, to the vapor space of a tank would extinguish a fire burning at a vent but the amount required would be so great as to render its use impracticable. 6. Steam, carbon dioxide, or water fog applied to the base of flames burning at a vent would be effective extinguishers.

The Stabilization Process of Natural Gasoline Extraction—Roy W. Machen. *Petroleum Engineer*, Mar., 1940, pp. 83, 84, 86. Regulations of top and bottom temperatures and pressures governed by the proper type of instruments facilitates close control of finished product. Selection of feed inlet; mechanics of stabilization; reflux ratio; top and bottom temperatures; tower pressure; stabilization efficiency.

Critical Solution Temperatures and Aniline Points of Some Butane Hydrocarbons—Clifford G. Ludeman, The Texas Co., Port Arthur, Texas. Aniline points and critical solution temperatures are useful physical constants of hydrocarbons for the correlation of data. A method is outlined which enables these constants to be obtained for volatile hydrocarbons. The

aniline points of n-butane, isobutane, and isobutene were found to be 83.1°, 107.6° and 14.9° C., respectively, and the critical solution temperatures of these hydrocarbons were 84.1°, 109.0°, and 15.8° C., respectively. These values confirm the minima which are indicated by the literature for the several hydrocarbon series of which these various butane hydrocarbons are members.

Suggested Correlation, Gas Gravity and Gasoline Content—K. Davison. *Oil and Gas Journal*, Feb. 8, 1940, p. 54. As a result of tests made during the last year there is indicated a close relationship between the gasoline content of natural or casinghead gas and the specific gravity of the same gas. The group of tests represents a cross section of natural gases in the Mid-Continent area. From the data a graph was constructed which shows this relationship.

Chart of Comparative Fuel Costs, Oil-Coal-Gas. Power. Oct. 1939, p. 122.

Wholesalers STABILIZED

BUTANE

- Bulk plants located at strategic locations for delivery direct to your trucks.
- Numerous sources of guaranteed supply.
- We also operate a fleet of transports in several states, delivering directly to dealer bulk plants.

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SMITH STEEL TANK CO.
Manufacturers of A.S.M.E. code tanks

R. J. ALLISON CO.
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Write for prices—specifications—
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Manufacturers of the GEST-CO line of
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GENERAL STEEL TANK CO.

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Let the Proof of *Time* Guarantee Your Pump



HARMAN Rotary Pumps

feature the absence of contacting metal parts and low friction bearings to insure long life and dependability.

H-119X Truck Pump

A pioneer in the manufacturing of LPG pumps, Harman Pacific Co. has produced a "proven" pump for all butane and propane needs. Write for detailed bulletin.

HARMAN PACIFIC CO.

"Since 1922"

1122 Santa Fe Ave., Los Angeles

Vinton, Iowa, Gets New Butane Gas Plant

Construction of the new brick building to house the modernized gas plant at Vinton is progressing rapidly, according to E. G. Nichols, Cedar Rapids district manager, says *The Front Line*, house publication of the Iowa Electric Light and Power Co. The new building, which will be of fireproof design, will be located just back of the present gas holder. In order to insure continuous service, all equipment will be installed in duplicate.

The present gas plant has become somewhat obsolete and the company decided to rebuild and modernize completely its gas facilities. The service will be changed from the present manufactured gas to butane gas, which has many advantages to the consumer. It was estimated that conversion to the new system would begin about May 1 and the cut-over effected about the third week in May.

At its own expense the company plans to convert all gas-burning equipment now in use by consumers so that it will operate properly on the new type of gas. This is done by changing the orifices and drilling out the ports of the gas burners to the exact size for maximum efficiency.

The new type gas has the same B.t.u. rating as the present gas.

The company's modernization program at Vinton will cost approximately \$25,000. However, gas rates will not be increased and customers will benefit by the increased efficiency of the new type gas.

Smith Precision Products Co. Will Enlarge Dealer Group

Now traveling throughout the Mid-Continent area, T. M. Penny, sales manager of the Smith Precision Products Co., of South Pasadena, Calif., plans to contact present dealers of the company and to appoint a number of new dealers.

Mr. Penny states that production facilities at the South Pasadena plant have been increased considerably to take care of the growing demand for their new rotary pump. Production, he says, has been increased on both the butane and propane pumps, and other high pressure units.

Home Economics Department Of Servel, Inc., Expands

As part of the expansion program of the Home Economics Department of Servel, Inc., Jane Tiffany Wagner, its director, has announced the appointment of Frances Cowing and Betty Stuart Smith, home economists, both of Chicago, to the staff of the department located in New York City.

Miss Cowing and Miss Smith will assist Miss Wagner in carrying out the expanded activities of her department, bringing her personnel up to two full-time assistants, in addition to an assistant director of Home Economics, Margaret Marable, who came with Servel, Inc., two years ago from the Lone Star Gas Co., Dallas, Texas. All these girls are college-trained. Also available are the services of a trained home economist in the testing kitchen of the Servel advertising agency, where any desired tests may be made, in connection with the work of the department.

Formerly known as the "Home Service Department," the new name, "Home Economics Department" has been given to more adequately cover the new scope of the department. This, in addition to the utility Home Service Departments, covers educational work as a whole which includes the extension field (4-H Club project), the Urban Youth foods project, and the Servel Electrolux Consignment program for testing kitchens and for colleges and universities.

Roy E. Hanson On Trip To Contact His Dealers

Roy E. Hanson, manufacturer of butane equipment in Los Angeles, Calif., is now on an extended trip through the Mid-Western and Eastern states. Mr. Hanson is contacting dealers throughout the country that sell his products. He is also signing new dealers to carry his complete line of butane and propane equipment.

The Hanson line now includes butane and propane tanks for all purposes, pumping and metering equipment, fittings and hoses and Hanson Redhead carburetor.

**YOU CAN
AUTOMATICALLY
MAKE MORE MONEY
WITH
*Automatic***



Automatic and Eveready Gas Systems have patented features and are expertly engineered. A.S.M.E. Code built... approved by Underwriters' Laboratories... quality built through and through.

Automatic and Eveready Gas Systems give you a complete line enabling you to get a more profitable volume.

Nationally known, nationally advertised, nationally accepted! Backed by planned "dealer help" advertising and sales promotion.

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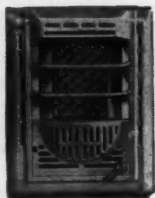


***Automatic
Gas Equipment Co.***

**2216-18 COMMERCE ST.
DALLAS, TEXAS**

— PEERLESS — WALL HEATERS

are outstanding values for use
with Liquefied Petroleum Gas



TWO, THREE, FOUR AND
FIVE RADIANT SIZES

Available in both Standard Sanitary and
Crane Co. colors to match your bathroom

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PEERLESS MFG. CORP.
LOUISVILLE, KENTUCKY



Complete stock
of Pressed Steel
I. C. C. Cylinders in Los
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ALWAYS IN STOCK

Butane Tank Fittings

Butane, Natural Gas Instruments,
Domestic Regulators, Pigtailes, Tanks,
Gauges, Forged Brass Fittings, etc.

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Drygas Butane Filters

AUTOMOTIVE INSTALLATIONS

We have made many of the largest automotive butane installations yet attempted in the L.P.G. field. Our bid and our work will please you.

ELECTRIC AND CARBURETOR ENGINEERING CO.

"Pioneers of the Butane Industry"

2323 E. 8TH ST.

LOS ANGELES

Blaw-Knox Co. Will Build New Line of Bulk Plants

Purchase savings and handling economy for the users of anhydrous ammonia, butane, carbon dioxide, chlorine, propane, and other hydrocarbons and liquefied gases are the objectives of the development by Blaw-Knox Co., Pittsburgh, Pa., of a complete line of bulk plants for the unloading and storage of liquefied gases.

The company will design and fabricate, and, if desired, erect and place in operation unloading and storage plants for any of the commonly used liquefied gases. Blaw-Knox will also furnish some form of housing, such as the standard all-steel weather-tight building, to shield equipment handling the higher vapor pressure materials.

Where inflammable and explosive liquids are involved, explosion-proof motors and vapor-proof lighting are used throughout, all to comply with the National Board of Fire Underwriters' Code. Valves and piping are designed for the particular gas being handled. The piping for propane, for example, is made from heavy steel with special plug type valves. Compression equipment is usually of the piston type but actual experience with the gas involved is a factor in the design. Special safety features are likewise built into the equipment to meet emergency considerations.

The equipment is further described and illustrated in the company's catalog, No. 1739, which also lists the thermo-dynamic properties of several gases.



New Catalog Is Available From General Controls

A new 48-page catalog has just been issued by General Controls.

In it, the entire line of pressure, flow and temperature controls manufactured by the company is illustrated and described. In addition, complete application, engineering and installation information covering each item is offered.

Copies of the new catalog may be obtained free by writing General Controls Co., 700 West Ivy St., Glendale, Calif.

C.N.G.A.'s June Frolic Is Set For June 8, at Riviera Club

With Harry Fiske, of Ingersoll-Rand, as chairman of the entertainment committee in charge of the event, plans for the 1940 June Frolic of the California Natural Gasoline Association, scheduled for all day and evening of Saturday, June 8, at the Riviera Country Club, Santa Monica, Calif., have been completed.

The daytime events, with the first flight of golfers teeing off as early as 7 a. m., have been rounded out into a mammoth sports fiesta with golf, baseball, handminton, polo, horseshoes and swimming to cater to the whims of every member, while the evening program is given over to an excellent dinner climaxed with a rollicking vaudeville show that will feature a galaxy of eye-filling beauty, with a laugh and a thrill packing every minute of the acts.

In view of the fact that a record turnout is indicated, those desiring to attend are requested to make reservations for tickets, priced at \$2.50 which includes dinner, through George Tyler, secretary-treasurer, California Natural Gasoline Association, 510 West Sixth St., Los Angeles.



Long Beach, Calif., Will Build Butane-Propane Standby

Definite steps are now under way for the establishment in Long Beach, Calif., of a butane-propane air-mix standby plant which will cost approximately \$250,000 and which, when completed early in December, will ensure the city an adequate emergency supply of domestic gas. The plant will be under the supervision of W. H. Partridge and E. S. Bryant, superintendent and assistant superintendent, respectively, of the city gas department.

Plans and specifications are now being prepared. The plant will be designed for 500,000 cu. ft. capacity per hour.

Long Beach now has available a natural gas supply of 15,000,000 cu. ft. daily, which is ample for municipal needs except during brief periods of unusual cold. The new standby will be used only at times when peak loads demand it.

SEALED HEAT

Anderson

TRIUMPHS IN THE LPG MARKET!



SCORES "SIGN UP" with Anderson for "SEALED-HEAT" PROFITS

What a reception Anderson has received in the LPG market! Dealers coast-to-coast are proving in SALES that SEALED HEAT is the key to richer markets, bigger profits. **What a story the Anderson gives you**—cooks with the gas turned off—cuts food bills—preserves flavor—reduces fuel costs—cuts kitchen-time in half! Plus six models priced for quick sale and substantial profit. To get in on this opportunity—GET THE FACTS. The coupon does it.

ANDERSON STOVE CO., INC.

ANDERSON, IND. 3

Gentlemen: Tell us all about increasing profits with Anderson "Sealed Heat" Gas Ranges.

Name _____

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The
**CARTER
OIL COMPANY**

Tulsa, Oklahoma
*Manufacturers
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of dehydrated
PROPANE and BUTANE
for the distributing and industrial
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**SPRAGUE
METERS**

for

PROPANE-BUTANE SERVICE

Write for Particulars

**SPRAGUE METER
COMPANY**

Bridgeport, Conn.

**Granberg Has New Automatic
Clutch Drive for Truck Pumps**

A new unit which makes it possible to run two pumps off one power-take-off is announced by Granberg Equipment Co., Inc., manufacturers of Granco pumps. The device is called the Granco Automatic Clutch Drive for Truck Pumps and is intended to meet the problem caused by need for different pumps to be operated from limited power-take-off facilities. This need is especially evident in airport tender and similar services, where mixture of gasoline of different octane ratings may cause emulsification.

The only requirement is that the power-take-off be reversible. With the new Granco unit, one pump is in operation when the take-off is running forward and the other when it is in reverse motion. It is impossible to operate both pumps at once as one pump stands still when the other is in use.

The unit is assembled complete, with two Granco over-running clutches, each with sprocket attached, shaft and shaft-bearings. Additional flexibility may be had by varying the size of sprocket on the pump.

The unit is easily installed, measures 17 inches overall, and weighs but 20 lbs.

**Hughes Gas Appliance Opens
Store in Hollis, Okla.**

A complete line of gas appliances, including Electrolux refrigerators, ranges, water heaters, floor furnaces and butane gas systems comprise the stock of the newly opened store in Hollis, Okla., of the Hughes Gas Appliance Co., owned by L. L. Hughes, of Erick, Okla.

There has also been established a filling station for bottles which service trucks will call for and deliver to the customers.

World's Smallest Light Plant

The firefly gives off about 1/25,000 candle power which lasts for less than one second. The making of this light involves the interaction of Luciferin, Luciferase and oxygen.—Science Weekly.

BUTANE-PROPANE News

A. S. Kincaid Is Elected To Ward Heater Board

A. S. Kincaid, southern representative of the Ward Heater Co., Los Angeles, for the past seven years, has been elected to the board of directors of the company and appointed southern manager, according to announcement by R. G. Logue, vice president and general manager.



A. S. KINCAID

Mr. Kincaid's new duties will take him throughout the South as far east as the Atlantic Seaboard. He will continue to make his headquarters in

Dallas, Texas, where the Ward Heater Co. has a direct factory representative, L. M. Taylor, who handles the central Texas district, served by the Lone Star System.



American Liquid Gas Corp. Will Distribute Nationally

The American Liquid Gas Corp., of Los Angeles, manufacturers of Algas conversion and dispensing equipment, recently adopted a nationwide sales and service plan through selected dealers for a systematic presentation of its products to the rapidly growing butane-propane market.

The appointment of new dealers and distributors is now being made by Walter T. Penny, who has held the position of secretary-treasurer and sales manager of the company since 1935, during which period he has worked toward the present advancement of sales throughout the country.

Mr. Penny will cover most of the states east of Colorado, eventually establishing a branch headquarters in or near Chicago. The company already has a district manager in Oklahoma, Fred H. LaFrentz, who has encountered fine cooperation and sales results from representatives appointed in the Oklahoma and Texas territory.

VIKING BUTANE PROPANE PUMPS

Viking offers a complete selection of motor and hand drive Butane and Propane pumps . . . relief valve on head furnished as standard equipment . . . all models are designed with extra long stuffing box and special treated gaskets. Standard models, of all capacities, can be shipped immediately . . . special units, designed with special drive arrangements to fit your particular pumping needs, can be delivered in a hurry.

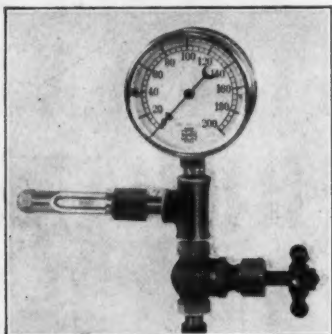
Check the complete line-up . . . write for Bulletin 2301-40 . . . it gives full specifications.



Look For This
Trade Mark—
The Sign of a
Genuine Viking

VIKING PUMP COMPANY
CEDAR FALLS, IOWA

MOISTURE TESTER



FOR BOTTLED GAS AND OTHER LIQUEFIED GAS PRODUCTS

The moisture content of gas passing through the Tester is shown by the color of indicating cartridge.

Write for Literature on Gas Testing Apparatus

THE REFINERY SUPPLY CO.

621 E. 4th St.
TULSA, OKLA.

1309 Capitol
HOUSTON, TEX.



**The Most
Distinctive
Underground
Storage System
on the Market**

Manufactured by

**NATIONAL BUTANE
GAS COMPANY**

MEMPHIS, TENNESSEE

Write for Particulars

James R. Scott Has Joined L. J. Mueller Furnace Co.

The appointment of James R. Scott, as assistant to the president, has been announced by H. P. Mueller, president of the L. J. Mueller Furnace Co., Milwaukee.

Mr. Scott, or "Jim" as he is better known to his friends in the utility field and the heating trade, is a graduate of the University of Illinois, and has a wide background of practical experience in heating sales and engineering. He was manager of the gas heating division of American Foundry and Furnace Co. for four years, and for the past seven years has been engaged in sales and engineering for Surface Combustion Corp.

With Mueller, Mr. Scott's duties will be to serve as "right hand man" to the president, in all matters pertaining to sales, equipment design, engineering and plant operation. Mr. Scott assumed his new position on April 1.

General Controls Opens Boston Branch Office

Announcement is made by General Controls Co., manufacturers of pressure, temperature and flow controls, of the opening of a branch office at 687 Boylston St., Boston, Mass. C. W. Marsh, sales engineer, will be in charge of this branch.

W. B. Wight Buys Control Of Consumer's Gas Co.

W. B. Wight has purchased the controlling interest in the Consumer's Gas Co., Albany, Ga. The company is said to be the oldest company operating in the state. Mr. Wight has been engaged in the wholesale oil business in the past.

Butane for Half Moon Bay, Calif.

M. T. Silva and C. E. Thompson, who own the Coastwise Gas Service in Half Moon Bay, Calif., have been given a franchise to sell Associated butane gas throughout San Mateo county.

A complete line of gas appliances for use with LPG has been stocked.

"Test for Acid Resistance Of Porcelain Enamels" Revised

The Product Standards Section of the Porcelain Enamel Institute presented in April a revised edition of the bulletin on acid resistance of porcelain enamels. This revision now makes it possible to check the finished porcelain enameled product by means of a spot test, where before it was necessary to cut out a sample and completely immerse it in the solution. The bulletin contains three sections—a Commercial Test, an Umpire Test, and a Research test. This test is for flatware. Cooking ware will be carried later.

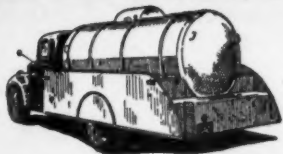


AT RIGHT: A 7500-gal. bulk plant of the newly established Bakern Liquid Gas Co., near Bakersfield, Calif. The transfer of liquid butane from storage tank to service truck is made by the L. C. Roney No. 751 differential compressor, which eliminates high liquid pressures in the lines.



THE BUTANE INDUSTRY LOOKS TO THE LEADER *for*

• Underground Tanks • Bulk Storage Tanks • Truck Tanks

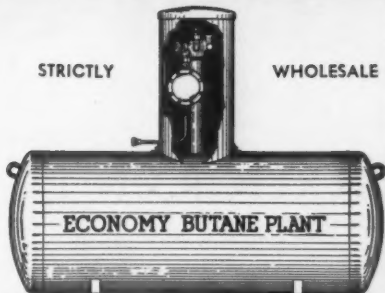


A. S. M. E. CODE CONSTRUCTION

ECONOMY BUTANE-PROPANE SYSTEMS are constructed for 100.8 lb., 125 lb. and 175 lb. working pressure for underground use; 200 lb. working pressure for above ground. ALL ECONOMY SYSTEMS bear Underwriters' label and inspected by the Ocean Accident and Guarantee Corporation, Ltd.

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WHOLESALE



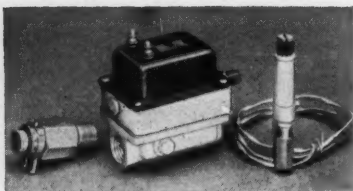
Our Tanks are designed and supervised by men with 20 years' experience in construction of containers for high grade pressure fuels.

Write, Phone or Wire for Complete Information

DALLAS TANK & WELDING CO., INC.

"Tanks by Banks"

201-5 West Commerce Street ■ Dallas, Texas

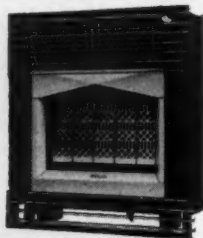


**BX SERIES WATER HEATER SET
GENERAL CONTROLS ALL-GAS PACKAGE**

Specify this BX-250 water heater set and you get real temperature control. Small differentials, averaging between 6° and 10° in the Tank Thermostat insure maximum fuel economy and steady water supply at the desired temperature, with no water log or overheating. Thermocouple pilot burner generator provides adequate current to operate the valve and eliminates all outside sources of electricity. Valves are available in 3/8" and 1/2" I.P.S. Tank Thermostat is extremely compact and is usually installed so that only the setting knob projects beyond the casing of the water heater. Temperature range is between 60° and 170° F.

Send for New 1940 Catalog.

GENERAL		CONTROLS
267 5th Avenue New York City		450 E. Ohio St. Chicago, Ill.



CIRKCLAIR UNITS

**FOR WALL HEATERS, MANTELS,
AND BUILT-IN CABINETS**

One of the features of CIRKCLAIR GAS HEATERS that makes them so popular is the units that can be installed in walls, mantels and other wooden enclosures—no insulation required. **Cirkclair Circulated Humidified Heat** is modern, economical heating.

Write for the Cirkclair Story.

CIRKCLAIR PRODUCTS DIV.

The Folsom Co. "Since 1909"

509-15 Elm

Dallas, Texas

Loyd J. White Receives Additional Honors

Loyd J. White, vice president in charge of engineering, Southern Steel Co., San Antonio, Texas, who recently received the "Modern Pioneer" award from the National Association of Manufacturers for developing greater use of liquefied petroleum gas through patents used in Hydro-Gas systems, was additionally honored on April 19 when he was invited to attend a stag dinner in Washington, D. C., given by the National Committee of the Sesquicentennial Celebration of the U. S. Patent Law. The dinner was given at the Mayflower hotel. Approximately 300 attended the dinner which was preceded by a special exhibit at the Patent Office.

C. F. Kettering, vice president, General Motors, was chairman of the meeting. Conway Coe, Commissioner of Patents, was a speaker. Honorable Homer T. Bone, chairman of the Senate Committee on Patents, read the President's Proclamation. Honorable Edward J. Noble also was one of the speakers. A floor show entitled, "The Parade of the Industries" was given ahead of the speeches. A portion of the program was broadcast.



Western Gas and Appliance Co. Organizes in South Dakota

Articles of incorporation for the Western Gas and Appliance Co. were filed with the secretary of state of South Dakota on April 18. No capital stock is to be issued. Incorporators are William J. and Rose Myhren, of Philip, and Harold and S. S. Margulies, of Rapid City.

Headquarters for the company will be at Rapid City.



Coconino G. and E. Co. Building Bulk Plant

L. A. Brown and Fred E. Henderson, proprietors of the Coconino Gas and Equipment Co., are now building a bulk plant in Flagstaff, Ariz. It will have a capacity of 15,000 gals.

Bu-Gas, a Standard Oil Co. product, will be handled through a franchise with Fannin's Hardware, Phoenix.

LEADERSHIP! Quality - Safety - Economy



16,000 Gallon Water — 15,000 Gallon Liquid
Propane Capacity Storage Tank 8'-0" - 1/16"
I. D. by 50' 5/4" long, 200 lbs. per square inch
working pressure.

Butane-Propane tanks fabricated in strict accordance with the ASME code; API-ASME Code; Dept. of Public Safety, Commonwealth of Massachusetts; and National Board of Boiler & Pressure Vessel Inspectors regulations. Complete bulk plants designed, fabricated and installed by experienced men. Detailed information and estimates furnished without obligation.

Bulk Tanks - Skid Tanks - Truck Tanks
for

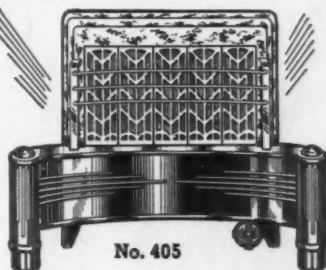
Butane • Propane
Butane-Propane Mixtures

LANCASTER IRON WORKS, INC.
LANCASTER PENNA.

**NEW
OUTLETS
for
NEW
VOLUME
with
HUMPHREY
Quality
Appliances**

HUMPHREY Radiantfires

New modern designs and new low prices will help you make many new sales this year of these popular Butane-Propane load builders. Send for latest catalog and price schedule.



No. 405

HUMPHREY OPALITES

Now you can sell Butane-Propane gases for lighting with these attractive new efficient lighting designs. They have already proved their popularity and success in the field. Send for full details today.



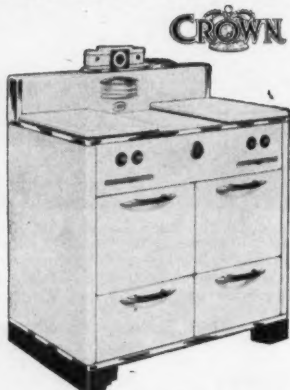
JUNIOR
MODEL



No.
1

GENERAL GAS LIGHT CO., Kalamazoo, Mich.

**APPROVED GAS RANGES FOR
LIQUEFIED PETROLEUM GAS**



Model 135-04 Divided Top Gas Range

Write Today for Catalog Showing
Complete Line

CROWN STOVE WORKS

4627-35 W. 12th Place Chicago, Illinois

**RONEY
LIQUID BUTANE
HAND PUMP**



Positive displacement
oscillating
vane type.
Capacity 12 gals.
per minute.
No. 755.
Size No. 3.
1 1/4-in. Pipe Inlet
and Outlet.

**OUTSTANDING
FEATURES**

1. Through bolted for greater strength.
2. Ground and polished shaft.
3. Faced flange connections with recessed Neoprene gaskets.
4. Special Butane resistant packing with lock-nut on packing gland.
5. Malleable iron handle.
6. High strength Meehanite body with bronze vane and valves.

Approved by I.A.C. for Propane or Butane Service

L.C. RONEY INC.
1740-44 W. 59th ST. • LOS ANGELES, CALIF.

**Service-Station Fire Losses
Average Less Than \$1 a Year**

Improved practices in operating petroleum-industry bulk distributing plants and service stations virtually have eliminated accidental fires. So rare have they become, fire-loss records believed representative of the industry indicate, that a service station may expect a fire not oftener than once in 220 years, a bulk plant one every 190 years.

The five-year record of more than 21,000 service stations and 9000 bulk distributing plants reported to the American Petroleum Institute also revealed that the few fires that do occur cause relatively modest damage, according to D. V. Stroop, director of the Institute's Department of Engineering. Loss on the average service-station fire during this period amounted only to \$200, that on a bulk-plant fire, \$1100. Averaged over all these properties, the annual fire loss per U. S. bulk plant is no more than \$6. For service stations averages are under \$1 per year.

**O. T. Barrett Has Not Sold
His Butane Business**

Contrary to reports which were published last month, one of them in BUTANE-PROPANE News, O. T. Barrett has not sold his butane business at Boulder Creek, Calif.

Operating under the name of the Barrett Butane & Equipment Co., Mr. Barrett has an office in Salinas, Calif., as well as at Boulder Creek, and at the latter place has a 4000-gal. bulk plant, one of the largest storage capacities in that district.

**Tomlinson Opens New Highway
Station for Trucks, Cars**

The Tomlinson Super-Butane Gas Co., distributors in Northern New Mexico of LPG, with headquarters at Raton, has recently opened a highway service station in Raton, according to W. C. Markham, manager.

The company is prepared to serve butane to trucks, tractors and automobiles.

Low Cooking Bills

BUILD HIGH SALES CURVES!



The New Mighty-Mite Burner with its high efficiency and low fuel consumption will give new impetus to bottled gas sales. Then just for good measure, Tappan gives you their other big features—Cove Top • Bowl Burners • Visualite Oven • Serva-Trays.

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Mansfield, Ohio



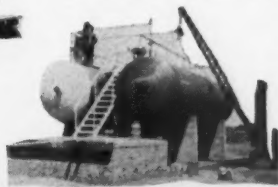
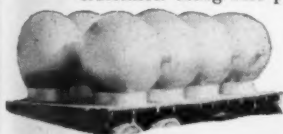
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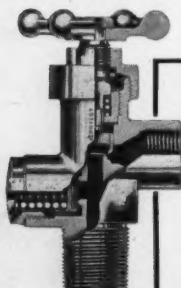
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PITTSBURGH, PA.**

New Tank Trailer's Equipment Speeds Up Delivery Service

Demand for Bu-Gas throughout the citrus area surrounding Santa Ana, Calif., has grown to such an extent during the past year that Windolph Bros., distributors for the territory, have been forced to add a 1500-gal. tank trailer for prompt delivery purposes to automotive and domestic consumers extending over a wide area. The trailer is used in conjunction with a fully equipped tank truck that pumps and meters butane.

Windolph Bros. have installed a Smith butane and propane truck mounting pump to insure delivery efficiency and to enable them to load and unload truck and trailer rapidly. They state that the high differential characteristics of their new Smith pump enables them to fill bottles from the truck without using vapor return lines.

An unusual feature of this tank truck and trailer unit is the two-way piping manifold that provides for pumping in as well as out of tank with the same pump.

R. E. Atkins Gets Franchise For Skelgas in Illinois

The Atkins Skelgas Sales and Service Co. has recently been made distributor for Skelgas in Jerseyville, Ill., and the surrounding community, according to R. E. Atkins. A new display room for appliances, equipment and offices has been opened at 121 West Pearl St.

To further sales efforts, Mr. Atkins has purchased a specially designed trailer which will be used in the display and demonstration of LPG appliances.

American Butane Gas Expands

J. L. Grigsby, head of the American Butane Gas Co., of Oklahoma City, Okla., has moved his plant from its former location on North Main St. to larger quarters at 1909 Exchange Ave., in what is known locally as the stock yards district.

The opening of the new building was celebrated with a series of demonstrations of the newest butane and propane equipment and appliances.

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Butane Wins Over Natural Gas When Estherville, Iowa, Votes

The citizens of Estherville, Iowa, went to the polls on April 9 and declared in terms of 1155 votes to 904 that they would not part with their municipally-owned butane gas plant in exchange for natural gas service.

The People's Natural Gas Co., a subsidiary of the Northern Natural Gas Co. of Omaha, Neb., which last fall constructed pipe lines through northern Iowa and Southern Minnesota, had offered Estherville \$42,500 for its butane plant and distribution system that only cost \$12,000 in 1938, and the city would be allowed to keep part of the butane equipment, at that. However, the plant and part of the system that holds over from 20 years previous to 1938 when manufactured gas was served, would have been conveyed to the natural gas company.

The city council voted to accept the purchase offer on March 6, subject to ratification by the voters, and between that date and April 9 a public information bureau was established by the natural gas company to provide facts and figures regarding operating and service costs to the citizens who sought complete information about the natural gas.



Douglas Aircraft Installs Butane Standby Plant

Following the trend of many large industrial plants and factories, the Douglas Aircraft Co., Inc., of Santa Monica, Calif., recently installed a large butane standby plant.

To be used in case of emergency, the standby unit, consisting of two 5000-gal. storage tanks, is equipped with the latest LPG equipment. The plant stands ready to be switched into use should the main gas supply be cut off during any time in the 24-hour schedule now maintained by many departments in the factory.

The plant was installed by the Associated Piping and Engineering Co. of Los Angeles. Fisher Regulators are used and the American Pipe and Steel Corp., of Alhambra, Calif., manufactured the tanks.

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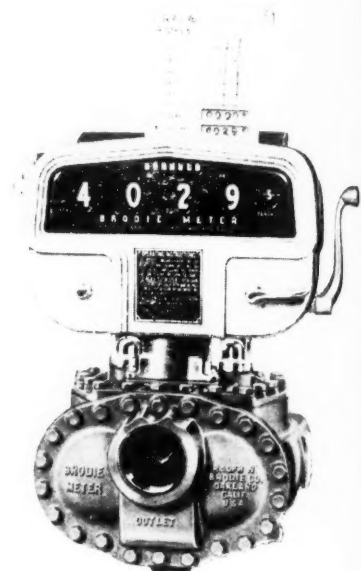
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